MAY 18, 1959

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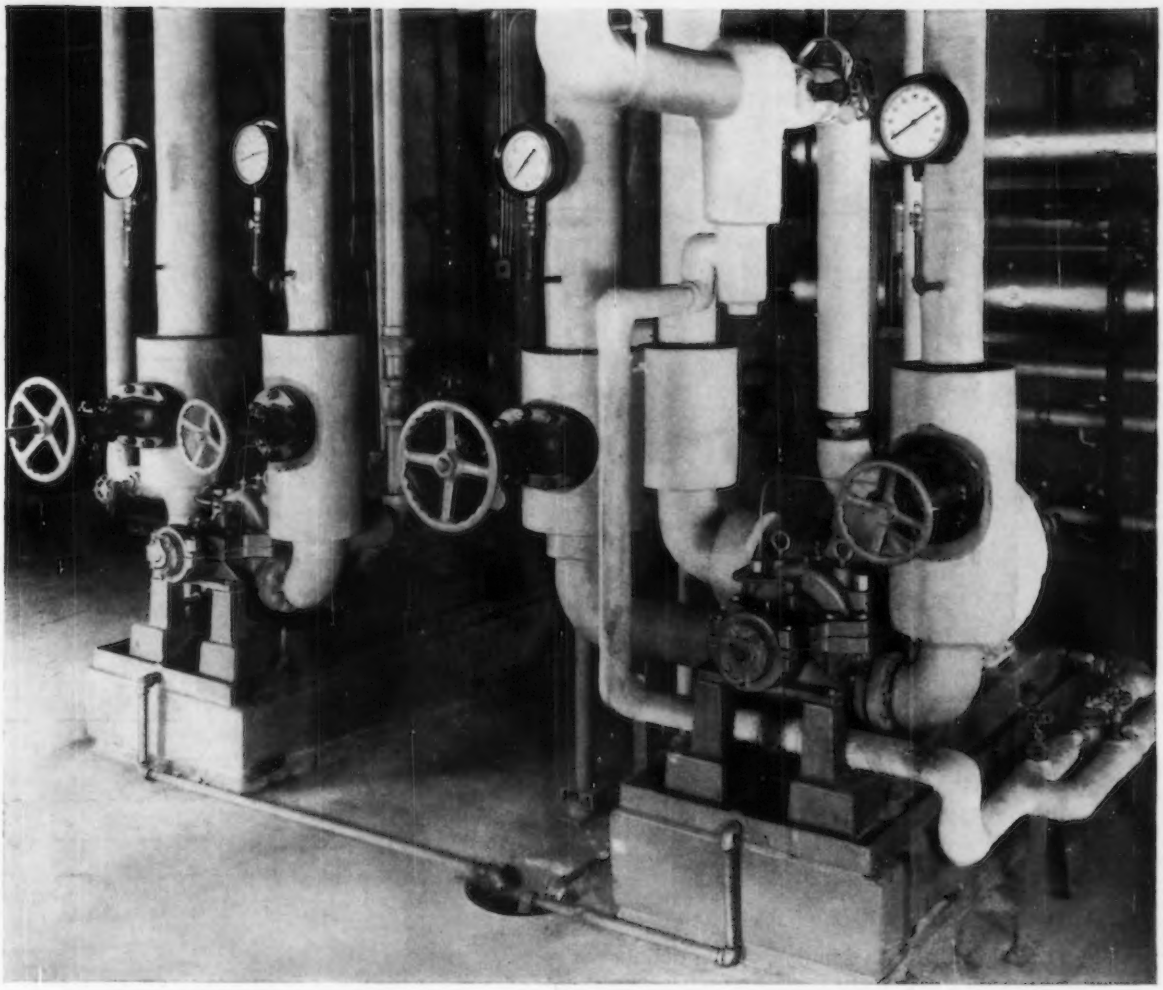

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PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

May 25-27, Tenth Coating Conference, Statler Hotel, Boston, Mass.

June 2-4, American Pulp and Paper Mill Superintendent's Ass'n., National Meeting at the Shamrock Hilton Hotel, Houston, Texas.

June 17-20; Summer Meeting, Technical Section, C.P.P.A., Manoir Richelieu, Murray Bay, Que., Canada.

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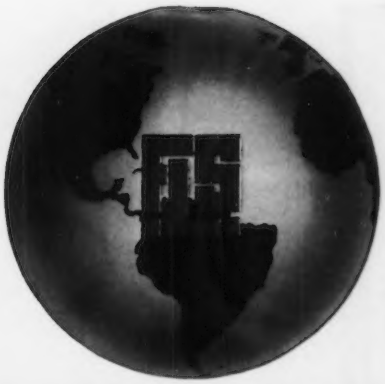

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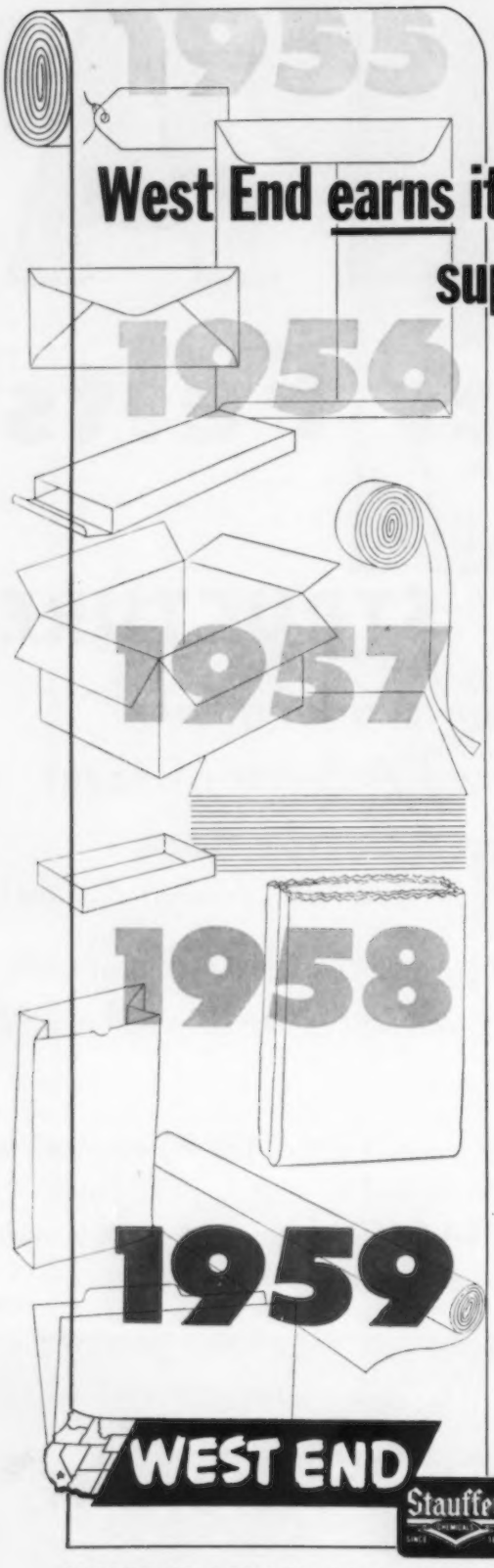

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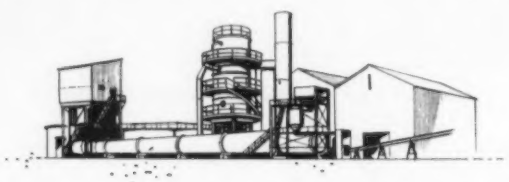

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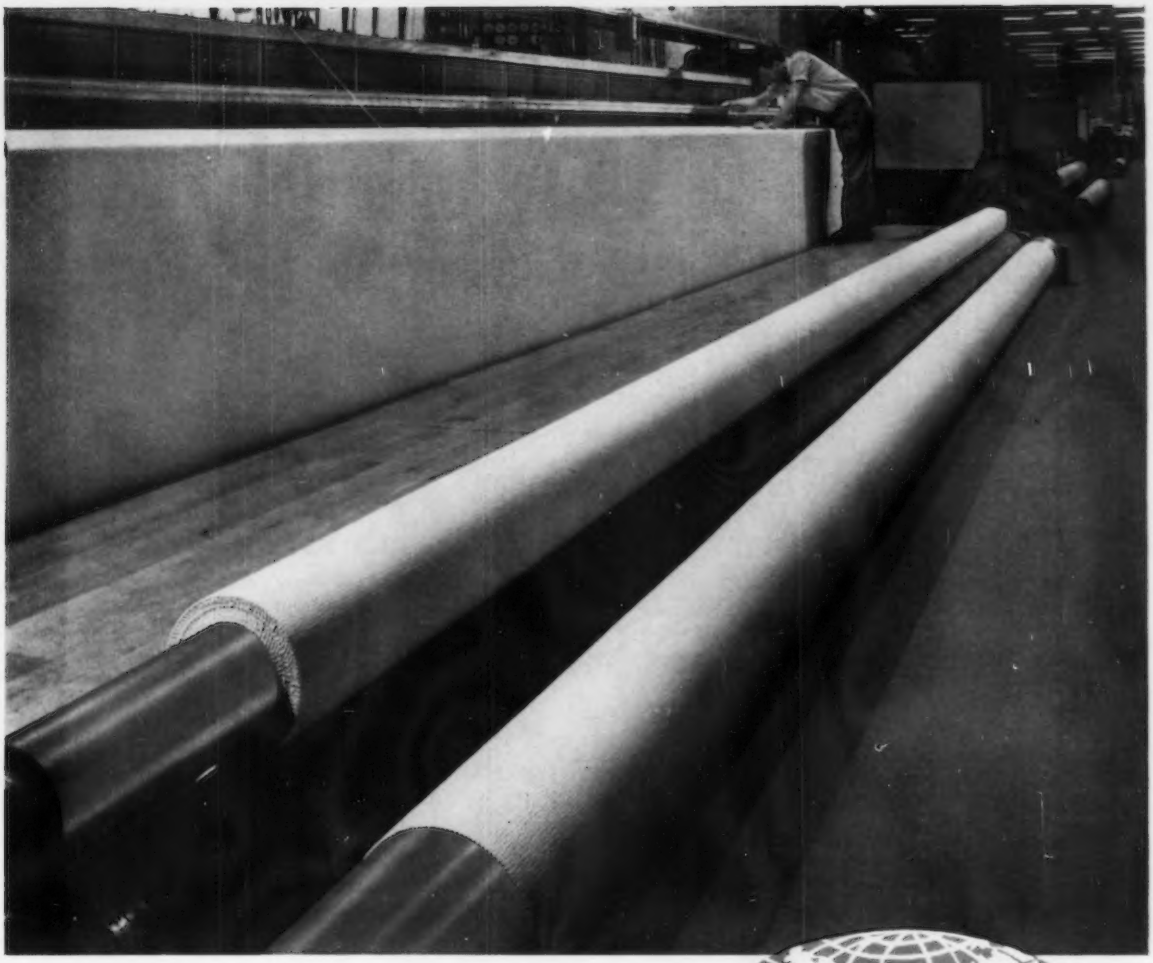

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One in a series of interviews with the men who are "Virginia"

"Combination bleaching of mechanical pulp – following peroxide with a hydrosulfite – can give you brightness gains of 15 to 20 points"

Robert Barton, a technical representative for Virginia Smelting Company, discusses the advantages of 2-stage bleaching from the standpoint of costs and results.

Robert Barton, a "Virginia" technical representative

Q Why does 2-stage bleaching give more brightness gains?

A Because the action of peroxide and hydrosulfite on pulp is not the same. Each gains its effect in a different way, and while there is some overlap in their action, there is a very worth-while cumulative effect. In other words, where you can reasonably expect a brightness gain up to 12 points using either bleach alone, the two bleaches used consecutively jump the results to anywhere from 15 to 20 points.

Q What are the advantages of 2-stage bleaching?

A Lower costs and better results—especially if the mill is now using some agent other than hydrosulfite for its single-stage bleaching. The big financial advantage in switching to a combination bleach goes to the pulp mill now using a single stage of peroxide.

Q How does the 2-stage bleach cut costs?

A The principle is to use as little of the more expensive peroxide as possible. The first stage is a bleach with peroxide. Follow this with a hydrosulfite bleach and you have cut the heart out of bleaching costs, at the same time stepping up the quality of the final product. Higher brightness and lower costs are the main reasons why 2-stage bleaching is becoming increasingly popular.

Q Can this process be applied to any kind of pulp with the same results?

A No, the response varies slightly with the wood from which the pulp is made. Good results have been obtained with spruce, poplar and pine groundwood pulps and with a large number of semimechanical pulps made from many species of caustic or sulfite pretreated hardwoods. Mixtures of chemical and mechanical pulps also respond favorably.

Q How can pulp manufacturers find out whether or not the 2-stage bleach will be advantageous to them?

A Simply by calling on the services of "Virginia." We can bring our lab equipment right into a mill, make tests, and demonstrate the possibilities of 2-stage bleaching under practical operating conditions. We will lend the mill any necessary equipment, find a spot in the system where the hydrosulfite stage can be inserted, and help run a mill trial. If the 2-stage process proves desirable, we will stay on the job and help iron out any technical problems that might arise. Under circumstances like these a pulpmaker can easily see where costs are being cut—and examine the improved final product with his own eyes. This is the kind of technical service on which "Virginia" has built its reputation.

• • •

For more information on 2-stage bleaching with "Virginia" zinc or sodium hydrosulfite, write us giving any technical data that may help us evaluate your problem. We will forward technical literature and run laboratory tests provided you furnish us fresh pulp samples. Or, if you say so, we will have a "Virginia" man call and talk over your requirements with you.

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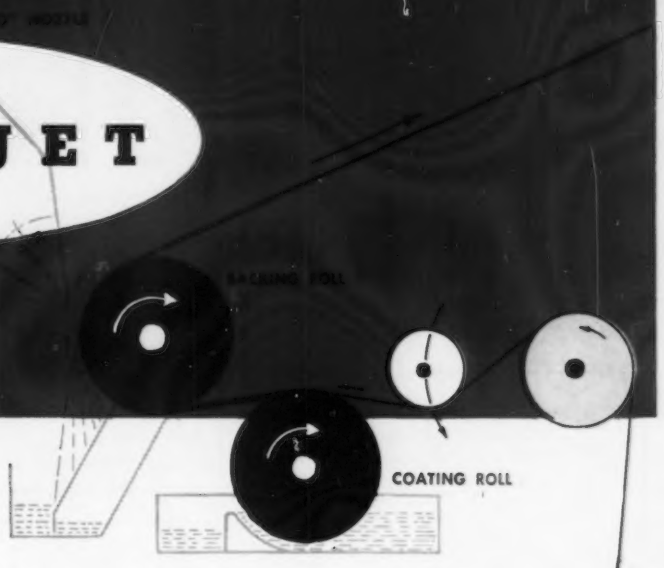

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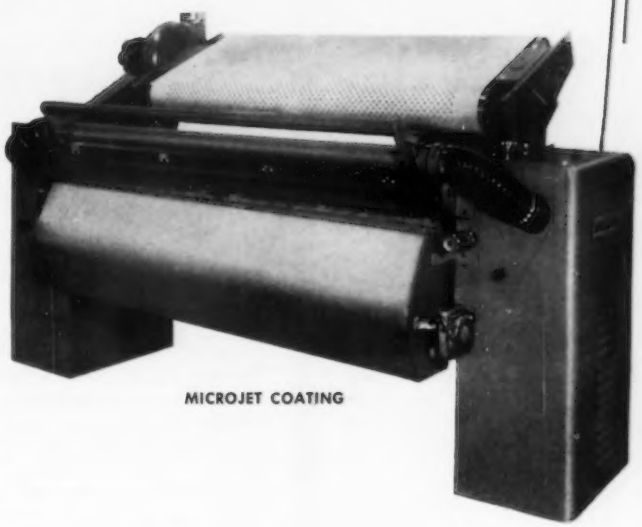

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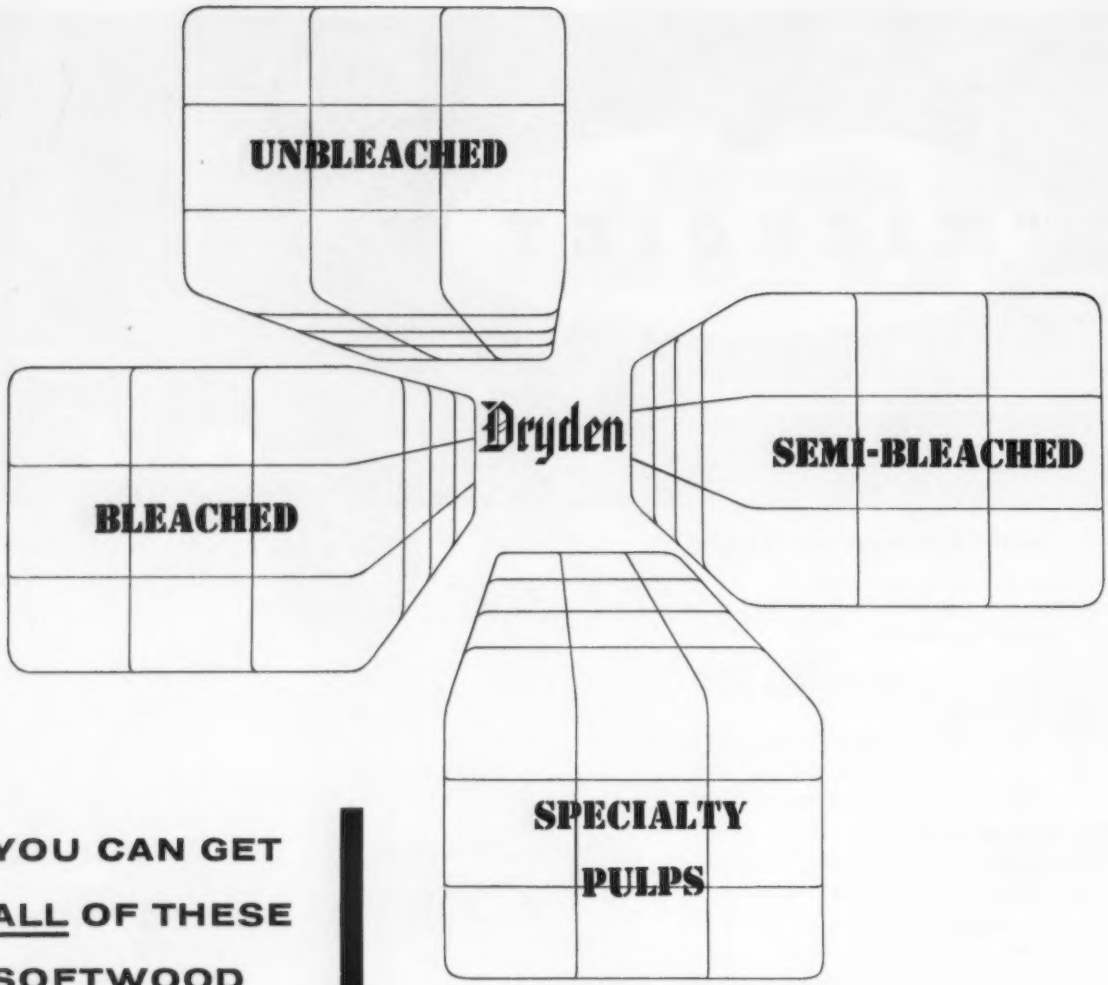

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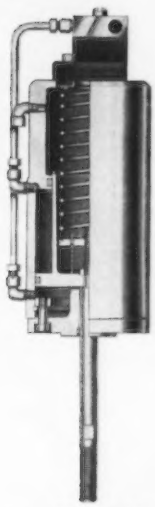

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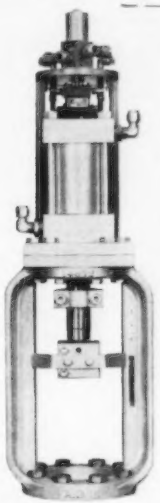

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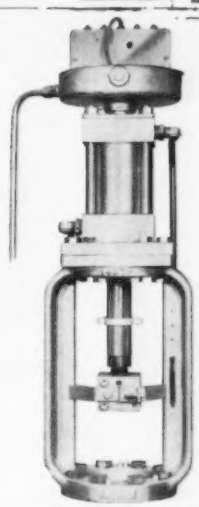

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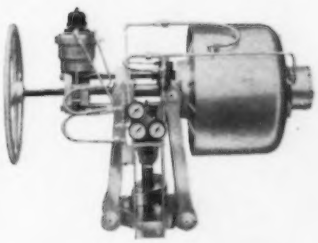

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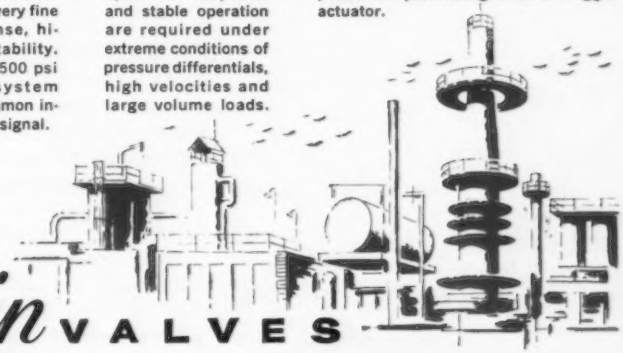
For process requirements where the unbalanced forces are extremely high, or where large through-puts are required. Three types are offered: pneumatic positioning, pneumatic on-off, and manual control, all embodying the toggle actuator; or a manual control arrangement can be combined with the pneumatic positioning or on-off toggle actuator.



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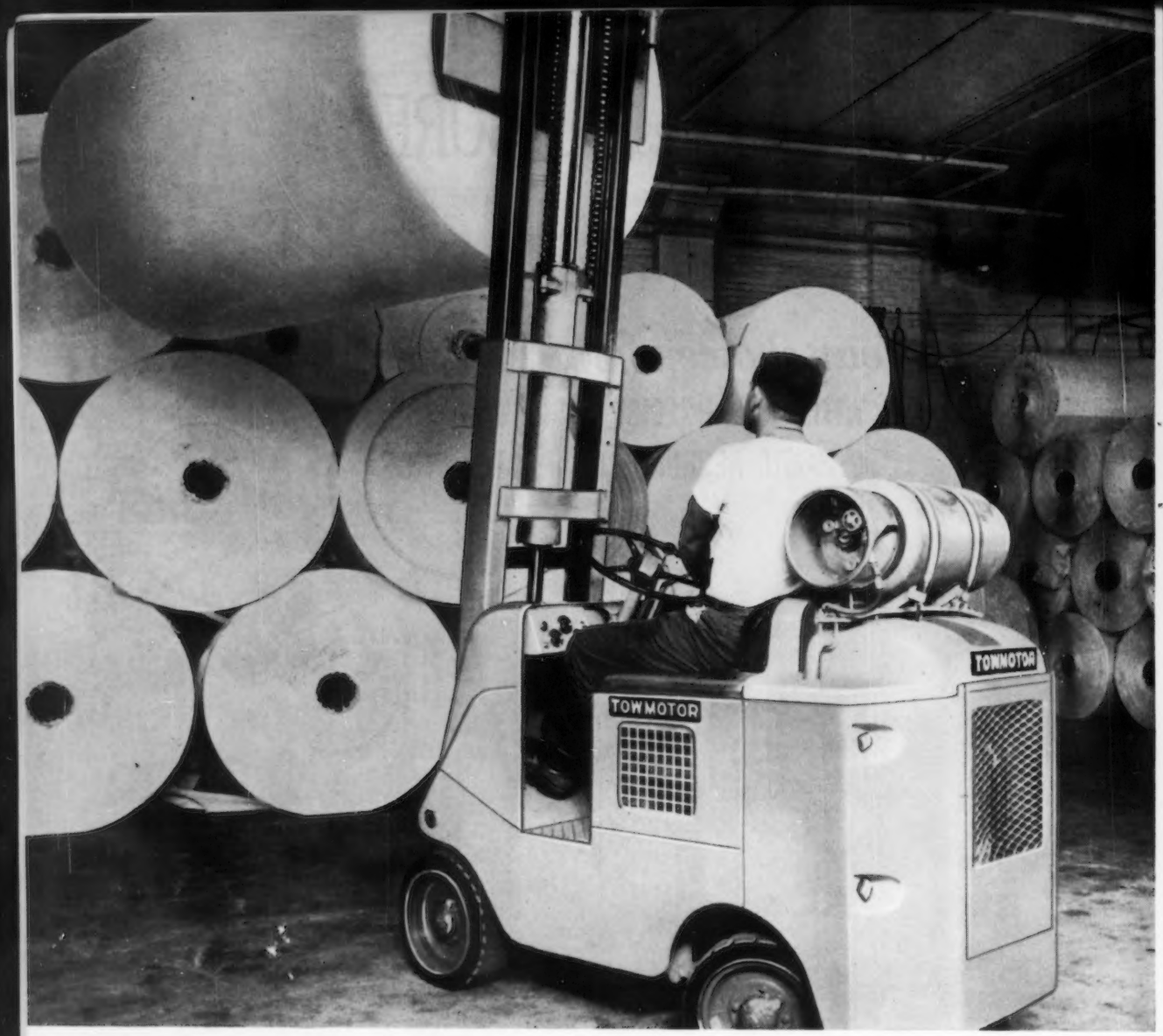

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Certified Job Studies continue to report new records of productivity and profit with Towmotor Fork Lift Trucks at work throughout industry. These reports by users show Towmotor handling great varieties of loads in factories, mills, yards, docks and warehouses. Unloading raw materials. Feeding production lines. Storing goods. Preventing platform tie-ups. Loading boxcars and trailers. Saving record amounts of time, space, effort and handling dollars in every industry . . . including *yours*.

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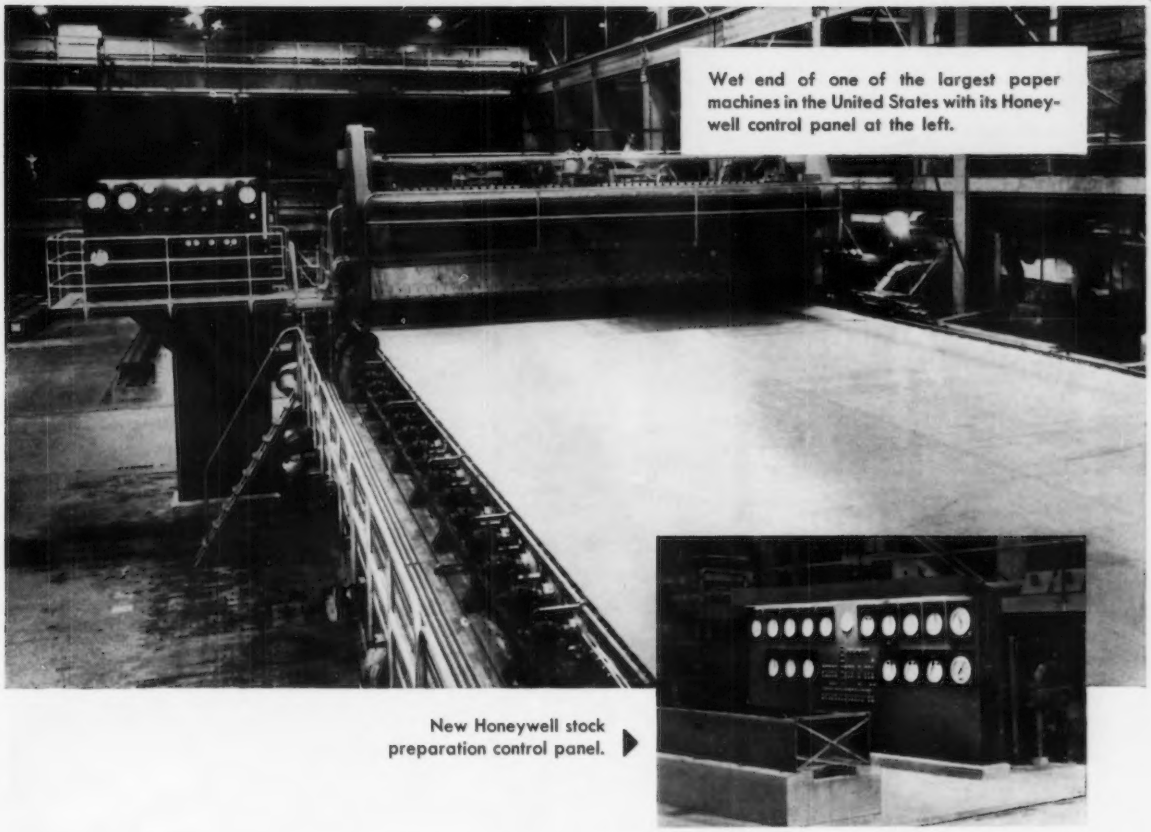

Wet end of one of the largest paper machines in the United States with its Honeywell control panel at the left.

New Honeywell stock preparation control panel.

Again at Coosa River Newsprint Company

. . . *Instrumentation by* HONEYWELL

When Coosa River Newsprint Company built a mill at Coosa Pines, Alabama, in 1949, Honeywell instrumentation was selected for control of most of the mill processes. When the company recently expanded its facilities, Honeywell instrumentation again was employed.

Coosa River knows the advantages of dealing with this single, dependable source for mill instrumentation and installation. Purchasing is simplified. Spare parts inventory is reduced. System components are easily adapted to changing process requirements. Maintenance is easier. And the job is backed by the world's largest instrument service organization.

Why not enjoy these advantages in your own mill? Honeywell can handle your control requirements . . . and take full responsibility for the job, from preliminary planning through installation and startup. Talk it over with your Honeywell field engineer. Call him today . . . he's as near as your phone.

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Honeywell

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Photo by Ewing Galloway, N. Y.

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"All that water in the canals of Venice just naturally makes me think of *water-conditioned* Hamilton Felts. They're especially designed, carefully woven and porosity-proven for faster water removal so they'll deliver drier sheets to the driers, permit operators to run machines at higher speeds with fewer stops, less broke."

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FELTS

SHULER & BENNINGHOFEN, HAMILTON, OHIO

Trends

Canadian Newsprint Mills To Operate at 82%

The Canadian newsprint manufacturers are expected to operate at only about 82% of capacity in 1959 as against 84% last year in spite of rising consumption, reports the Newsprint Information Committee. This is due to the fact that the full potential of new paper machines installed in 1958 was only realized for part of that year. The Newsprint Association of Canada's estimate is that United States consumption will be 5% greater than last year's.

Corrugated Boxes Away Up

Production of corrugated boxes in the first four months of this year (January through April) ran 17% higher than in the same first third of 1957.

Profits Off and Sales Up in 1958

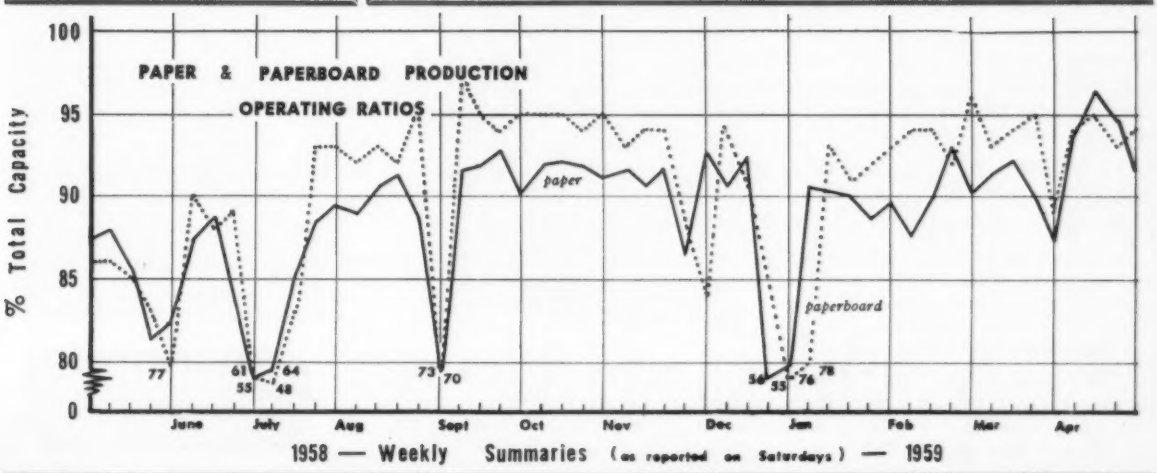
Profits for 88 pulp and paper companies surveyed (accounting for nearly one-half the sales) by APPA in 1958 were down 10.2% from 1957, despite an increase in total sales of 1.3%. In the last quarter of 1958 both profits and sales were ahead of the same period in 1957. Total net worth of the 81 companies reporting this figure was up nearly 5% during 1958.

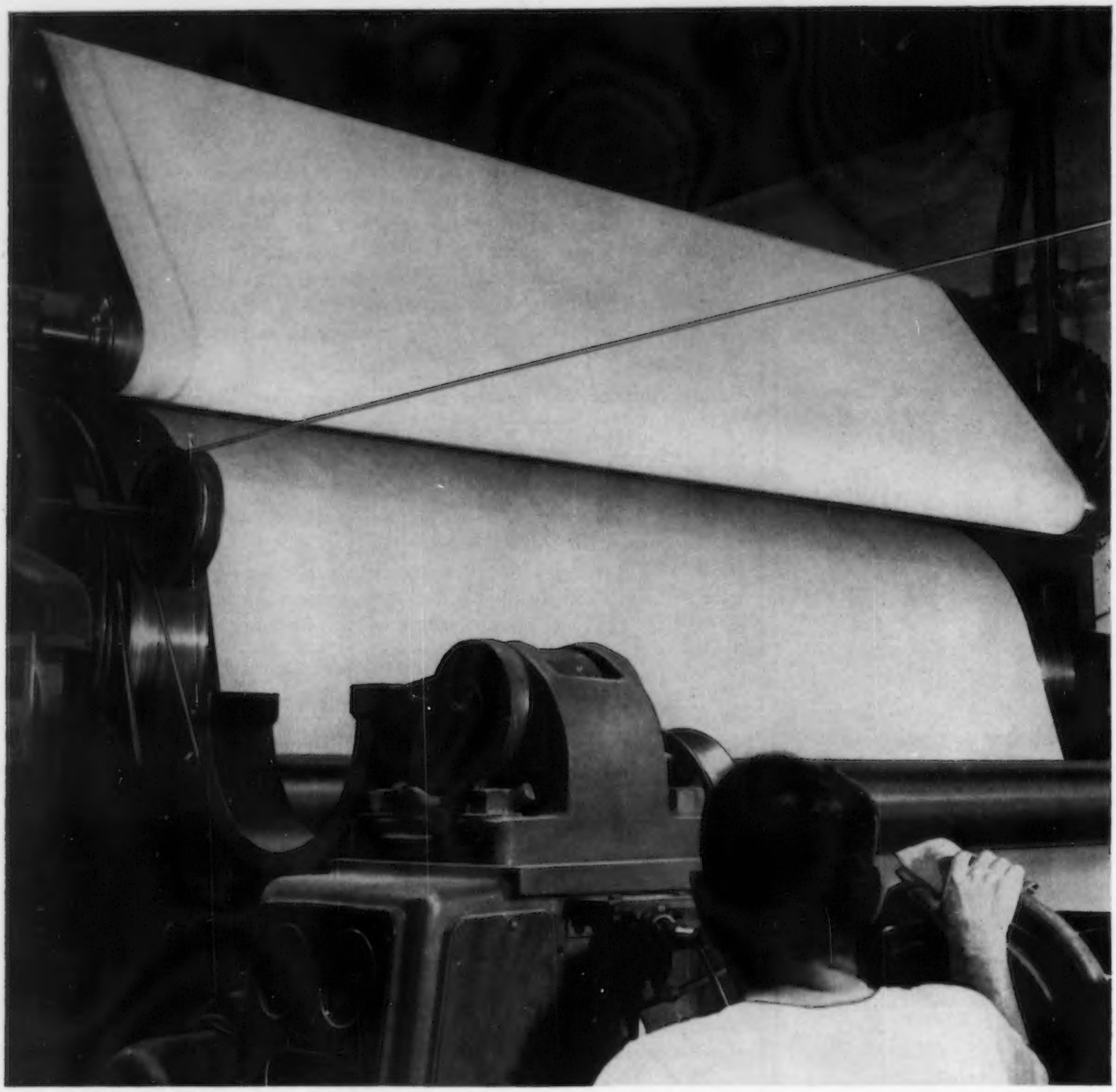
Set-Up Boxes Showing Good Improvement

Set-up box billings during March increased 7.8% over March last year reports the National Paper Box Manufacturers Ass'n. Billings for the first quarter were up 3.9%. March orders were 25.5% ahead of March 1957. Orders for the first quarter were 16.8% ahead.

No Improvement in Coating Men's Secretiveness

Program for next week's TAPPI coating conference shows no improvement in the inherent secretiveness of mills doing coating. Year after year the vast majority of the papers on the program are presented by suppliers. This year, when as never before, more mills are evidencing interest not only in coating paper but also various grades of board including unbleached kraft, there is only one paper by a mill man on his plant's operation, out of the total of fifteen papers to be presented.





THE KRAFT IN BAG MAKING—Every sixth paper grocery bag used in the United States is made by Gulf States Paper Corporation of Tuscaloosa, Alabama and distributed through their Sales Division, The E-Z Opener Bag Company. Almost 80% of the 400 to 500 tons of paper produced each day at Gulf is utilized for the production of paper bags. The heavy kraft paper required for this purpose is made on a battery of high speed paper-making machines, typical of which is the Number 3 Machine. It is 234" wide, operates at a speed of over 1000 feet per minute, and is fitted with Mount Vernon Dryer Felts.

This is another example of how fabrics made by Mount Vernon Mills, Inc. and the industries they serve, are serving America. Mount Vernon engineers and its laboratory facilities are available to help you in the development of any new fabric or in the application of those already available.

PRE-STRETCHED—All Mount Vernon dryer felts are available pre-stretched and pre-shrunk, with or without clipper seams.

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PJT | PAPER TRADE JOURNAL

WEEK OF MAY 18, 1959

Canadian KVP to Install New Paper Machine

The KVP Co., Ltd., wholly owned Canadian subsidiary of The KVP Co., Kalamazoo, has announced plans for the installation of a new paper machine in its mill at Espanola, Ontario, Canada. This machine will have an annual capacity of 15,000 tons of bleached kraft specialty papers. The new unit will be capable of producing both machine glazed and machine finished papers. This extra capacity will complement existing paper-making facilities.

E. Norval Hunter, president of The KVP Co., Ltd., in making this announcement, indicated that the new unit would come into production in 1960. Estimated cost of the additional facilities, including stock preparation equipment and auxiliaries, will be in excess of $2,500,000. The major contract has been awarded to Black-Clawson (Canada) Ltd.

Southern Unions Begin Negotiation

Southern union leaders met in Mobile early in May to plan their requests for up-coming contract negotiations. It was stated that flat increases will be requested instead of percentage increases. The amount of the increases were not revealed by officials of the Southern Association of Pulp and Paper Mill Industries Unions who held the meeting.

It is reported that they also decided to ask the companies to pay the difference between an employee's regular weekly wage and what he earns while drawing workman's compensation.

Another reported request will be that a portion of the proposed wage increase be used to improve the insurance and retirement plans.

Contract talks started last week with International Paper Co. The contract reached with International, largest single paper company in the South, normally sets the basic pattern for the paper industry there.

Gaspesia Elects New Top Executives

T. R. Moore

E. L. Neal

At a meeting of the board of directors of Gaspesia Sulphite Co., Ltd., held after the annual general meeting of shareholders, T. R. Moore was elected chairman of the board and E. L. Neal was elected president. Mr. Moore is also president of Anglo-Newfoundland and Development Co., Ltd. Mr. Neal is general manager of Gaspesia Sulphite Co.

Court Victory on Water Use Won in Wisconsin

A significant court victory was recently won by the growing number of water users and riparian owners who are stiffening resistance to further diversion for irrigation.

Circuit Judge Richard W. Bardwell of Dane County, in a court case in which the Nekoosa-Edwards Paper Co. and two individual riparian owners had disputed a Wisconsin Public Service Commission permit to divert water granted to two Portage county potato growers, handed down a decision, the main points of which were:

1. A Wisconsin statute of 1935 authorizes diversion of surplus water, but defines surplus water as "any water of a stream which is not being beneficially used."

2. In this particuler case, the water of Buena Vista Creek, flowing into Nepco Lake, was being beneficially used by the Nekoosa-Edwards Paper Co. and by the village of Port Edwards for its drinking supply.

3. The water to be used for irrigation on this particular stream thus being defined as "non-surplus," it could not be diverted without the consent of the downstream riparian owners.

Paper and Board Production

According to the American Paper and Pulp Ass'n., the ratio of the United States production to mill capacity for the week ending May 2, 1959, was 91.6 per cent compared with 95.8 per cent revised for the preceding week. The ratio was 89.5 per cent for the corresponding week a year ago.

The paperboard production ratio for the week ending May 2, 1959, was 94 per cent compared with 93 per cent for the preceding week and 81 per cent for the corresponding week a year ago.

(Detailed statistics on page 61.)

FIRST IN SOUTH—The first carload of Scott Paper Co.'s nationally known household paper products has been shipped from Scott's Mobile mill. Participating in special ceremonies were, from left, James L. Madden, Scott vice president; John W. McNichol, Southern Division general manager, and Paul C. Baldwin, Scott vice president, who is shown here sealing the door to the car loaded with Scott trademarked brands.

Acceptance of Contract Ends Bryant Strike

A short-lived strike of 600 Bryant Allied Paper Corp. mill workers came to an end shortly after noon May 2. It ended after members of both the Bryant and King Division locals of United Papermakers and Paperworkers Union voted to accept conditions for a one-year contract negotiated early in the morning.

Bryant Mill workers were scheduled to return to their posts May 4.

The contracts as negotiated provide a total package of 10.3 cents per hour, part of which was accounted for by fringe benefits.

Missouri Discourages Future Mills

The State Conservation Commission decided Monday to oppose establishment of any pulp paper mills in Missouri unless they are rigidly regulated to prevent stream pollution.

The brief policy statement said:

"The conservation commission recognizes the possibility of pulp mills in Missouri as a potential and beneficial use of forest resources but would be forced to object to establishment of such mills in locations where a stream pollution might result in serious damage to fishery resources. . . .

The location of any pulp mill and the type of process it utilizes should be carefully considered and that the (state) water pollution board should insist that rigid standards for the maintenance of water quality be established by any such operation before an operating permit is issued."

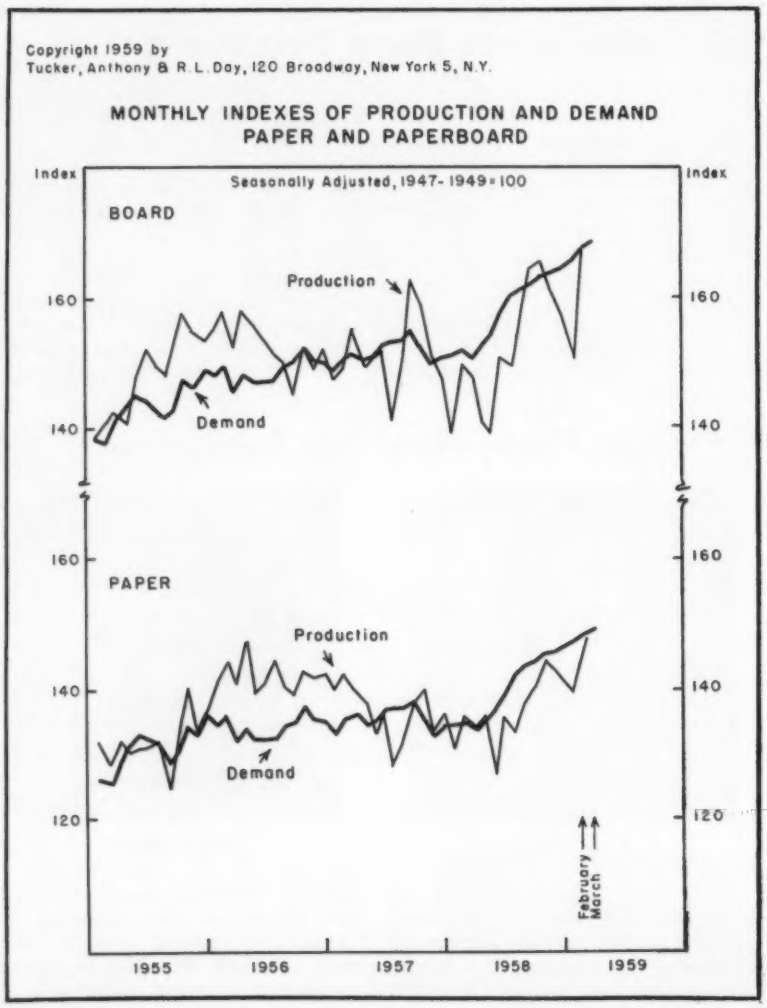
Supply and Demand in the Paper Industry

That paper production has not kept up with the basic demand for consumption is shown in the chart below, in spite of the record volume of production that has been made in recent months. A natural result is that, in view of the need expressed by many manufacturers, higher prices for paper will soon appear.

Some limitations on the activities in that direction lie in the fact that the situation indicated in the chart does not apply to all grades. For example, newsprint and the building grades are excluded from the chart.* It covers all the other paper and board grades.

Our paper and board indexes shown on the chart are of course made up from a number of segments. On such a broad basis there may be differences among the segments but we believe that the general tendency in the near future is towards higher prices in the paper industry. This could enhance the attractiveness of many paper stocks.—*Lewis I. Stevenson,* Tucker, Anthony & R. L. Day.

* Editor's Note: It so happens that the pattern for these grades is quite different.



PAPER PEOPLE

G. R. Zaloudek

R. W. Koch

O-I Names Zaloudek Division Engineer

George R. Zaloudek, staff engineer for the Owens-Illinois Glass Co. paper mill division, has been named division engineer.

His appointment was announced by Fred B. Schelhorn, vice president in charge of manufacturing and research for the paper division. Mr. Zaloudek succeeds Glenn Ralston.

A native of Medina, Wash., Mr. Zaloudek was assistant plant engineer and later plant engineer at the company's Valdosta, Ga., paper mill. He was transferred to the company's general headquarters in Toledo, Ohio, as staff engineer last year.

Before joining O-I he served in engineering capacities with Rayonier, Inc., Masonite Corp., and the Beloit Iron Works.

Cons. WP&P Names Steele Div. Technical Mgr.

Roger L. Steele has been appointed to the new position of technical manager of Ahdawagam Division of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. In this new position he will be responsible for technical control and product design and development.

Mr. Steele joined the company in 1954 as a steam and combustion engineer and has been special project leader at Ahdawagam Division since October 1958. He was graduated from the State University of Iowa and received a master's degree from Pennsylvania State University.

Koch Elected Director Of Standard Packaging

Richard W. Koch has been elected to the board of directors of Standard Packaging Corp. He will continue in his present position as vice president and general sales manager.

Mr. Koch had previously been associated with the Continental Can Corp. as marketing consultant, and for five years had served as vice president of the Dixie Cup Co., where he specialized in the fields of marketing, sales administration and market research.

Mr. Koch is filling the vacancy created by the resignation of O. D. Carlson.

Champion Names Betts To New Post

Richard L. Betts has been named to the newly created position of director of contractual relations at the Champion Paper and Fibre Co., Hamilton, Ohio. He will administer the firm's performance under assigned supply contract agreements.

A Champion employee since 1937, Mr. Betts has held various technical positions and then became general scheduling supervisor at the firm's general office. In 1949 he was assigned to Champion's Texas Division, Pasadena, Tex., where he was assistant paper mill superintendent, paper mill superintendent, assistant divisional production manager and then divisional production manager.

In 1958 he returned to the general office in Hamilton as assistant director of production.

Chemcell Names New V-P

Appointment of Paul M. Marshall as a vice president of Chemcell (Canadian Chemical & Cellulose Co., Ltd.) has been announced. Mr. Marshall will continue as secretary-treasurer of the company. Chemcell is comprised of the British Columbia Cellulose Co., Ltd., and Celgar Ltd., together with Canadian Chemical Co., Ltd., which has a petrochemical and textile plant at Edmonton, Alberta, and a textile finishing plant at St. Jean, Quebec.

Reilly Joins Fitchburg

The appointment of Gerald D. Reilly as director of commercial sales for Fitchburg Paper Corp. has been announced. Mr. Reilly joined the sales staff of Fitchburg Paper in 1953 and recently has been in charge of greeting card paper sales.

After graduating from Amherst College, Mr. Reilly joined Newton Falls Paper Mills serving in both manufacturing and sales. He has also been associated with American Color Type in New York City. Prior to the Korean War, he was with the Army Quartermaster Corps Procurement Office as a civilian paper specialist.

G. A. Jackson

Champion Names Jackson Director of Purchases

G. A. Jackson has been named director of purchases for The Champion Paper and Fibre Co., Hamilton, Ohio. He succeeds Lewis K. Johnstone, recently named director of a newly created pulp marketing department.

Mr. Jackson, whose new duties include responsibility for the company-wide purchasing programs, joined Champion's Texas Division, Pasadena, Tex., in 1949 as an industrial engineer and was appointed a divi-

sion buyer there the following year. In 1953 he became purchasing agent for the Texas Division and in 1956 manager of the division's purchase, stores and traffic department.

Born in Lexington, Tex., he previously had been manager of the Austin, Tex., Transit Co. and employment manager of the U. S. Steel Co.'s ship building division at Orange, Tex.

J. S. Buchanan

Buchanan Named Technical Assistant at Nekoosa

John S. Buchanan has been appointed technical assistant to the kraft mill superintendent of Nekoosa-Edwards Paper Co., a leading producer of business papers.

He has been a research chemical engineer with the company since June 1956, specializing in pulping and bleaching projects. A graduate of the University of Wisconsin in 1953, Mr. Buchanan also earned a master's degree from the state university. His previous background before joining Nekoosa-Edwards includes positions with Scott Paper Co., Marinette, Wis., and the U. S. Forest Products Laboratory in Madison.

Richmond Named Manager Alaska Pine Pulp Div.

R. H. Richmond has been appointed as manager of the pulp division of Alaska Pine and Cellulose Ltd. Mr. Richmond assumed his new duties in Vancouver, B. C., on May 1.

Born at Rouleau, Sask., he is a graduate in chemical engineering of the University of British Columbia. He has been with the company since 1933 and rose to the position of resident manager of the Port Alice, pulp mill. Recently he has been assistant resident manager of the Rayonier mill at Port Angeles, Wash.

Allied to Open St. Louis Sales Office

The Allied Paper Corp. has disclosed plans to open a St. Louis sales office. Kent F. Johnson, Allied's Middlewestern sales representative, will move from Chicago to take charge of the St. Louis operation.

In addition to the city of St. Louis, Allied's new office will service accounts in Missouri, Western Tennessee, Mississippi, Louisiana, Texas, Oklahoma, Arkansas, Nebraska, Colorado, Kansas and Iowa.

Ward Succeeds Davison At Lawrence Corp.

Duncan A. Ward has been appointed assistant secretary of the Lawrence Corp., Montreal, Canada. Mr. Ward joined the corporation's East Angus Mill in 1926. After considerable experience at this mill, as well as one of the corporation's subsidiaries, Mr. Ward was moved to the head office, Montreal, in 1952. He succeeds C. W. Davison, who retired in February.

Crawford Honored At Testimonial Dinner

Oswald Crawford, retiring traffic manager of the Powell River Co., Ltd., Vancouver, B. C., was recently honored at a testimonial dinner.

The Canadian Manufacturers' Association, The Canadian Industrial Traffic League and the Vancouver Board of Trade sponsored the dinner.

Representatives of the provincial government, the board of trade and the University of B. C. paid tribute to Mr. Crawford.

Mr. Crawford is a past president of the Canadian Industrial Traffic League and is chairman of the advisory committee to the provincial government on freight rates.

Kraft Paper Promotes Whelan and McSwiney

The appointment of James A. Whelan as manager of production, and E. V. McSwiney, as assistant vice president of Rome Kraft Co., Rome, Ga., have been announced.

Mr. Whelan was promoted from the position of general superintendent, which he has held since June 1955. Mr. McSwiney has been serving as comptroller of Rome Kraft Co. since June 1956, and will continue to serve in this capacity along with his new assignment.

Howard Succeeds Naudain At Union Bag

Union Bag-Camp Paper Corp., announces the appointment of R. Carter Howard as director, containerboard sales. He succeeds Albert G. Naudain.

A member of the Union Bag-Camp organization since 1954, Mr. Howard served most recently as assistant director, containerboard sales.

R. C. Farnsworth

Farnsworth Named Asst. Sales Manager for Nekoosa

Robert C. Farnsworth, a Nekoosa papers sales representative for the past 10 years, has been named assistant sales manager for Nekoosa-Edwards Paper Co. He will assume his new sales duties in the company's main offices in Port Edwards May 1, according to G. E. Veneman, vice president and director of sales.

Mr. Farnsworth was graduated from the University of Wisconsin as a chemical engineer and was employed in the technical department of Consolidated Water Power and Paper Co. before joining the Nekoosa-Edwards sales force as a trainee in March 1949.

Doyle to Serve as BDSA Forest Products Advisor

Leonard J. Doyle, vice president of the Union Bag-Camp Paper Corp., of New York, was named an advisor to the director, Forest Products Division, Business and Defense Services Administration, U.S. Department of Commerce.

Mr. Doyle, a resident of Chittenden, Vt., comes to BDSA under an arrangement by which industry makes executive personnel available to the Government for temporary tours of duty. He serves without compensation, and the assignment also qualifies him for the National Defense Executive Reserve which

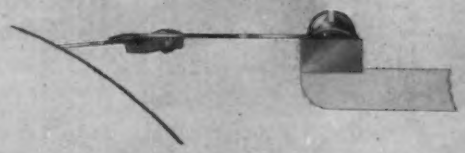
DOCTORS THAT SPECIALIZE IN REDUCING REJECTS AND BREAKS

Dirty, unsmooth roll surfaces mean costly breaks, shutdowns and rejects.

Vickery Doctors keep the rolls clean and smooth so that they're always in shape to do their best work.

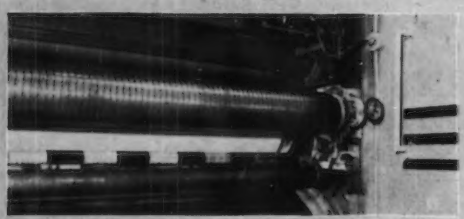
Twelve different designs permit Vickery Doctors to be engineered for the specific roll length, diameter, temperature, moisture conditions, surface composition and speed.

Vickery Hi-Angle Doctors combine light pressure with high cleaning efficiency.



Vickery Hi-Flex Doctors with spring-fingered blade holders provide the super flexibility to hug every inch of the roll.

Vickery RS Type Doctors are designed for quick, safe blade changing, even when space is limited.



Vickery Oscillating Doctors are available with hydraulic or motor drive.

Vickery Air-Lift mechanism lifts individual Doctors or all Doctors simultaneously with one control lever.

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BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

VICKERY DOCTORS

would staff the operation of a production agency in event of national emergency.

A native of Hudson Falls, N. Y., Mr. Doyle has been with Union Bag-Camp since he joined the corporation as an office boy at Hudson Falls at the age of 14.

A. G. Naudain

Naudain Joins G-P Paper In New Sales Position

A. G. Naudain has been named vice president in charge of sales by Georgia-Pacific Paper Co. The position is a newly created one to strengthen the company's sales staff to meet requirements resulting from the firm's substantial expansion in the pulp, paper, and containerboard field. Georgia-Pacific Paper Co.'s Toledo, Ore., plant went into production in January, 1958, and since then has increased its daily capacity 40 per cent.

Mr. Naudain comes to Georgia-Pacific from the Union Bag-Camp Paper Corp. where he was director of sales for the containerboard division.

Hanna Joins Deferiet Personnel Staff

Robert B. Hanna has joined St. Regis at Deferiet, as training and safety administrator. In this capacity he will develop and conduct a program of training and communications, and also will direct the safety functions at Northern New York mills.

Rhinelander Ups Three

Richard C. Crain has been appointed technical director of Rhinelander Paper Co., division of St. Regis Paper Co. He is in charge of the research department, converting plant laboratory, the main plant control laboratory, quality control, coater mixing and other related technical matters.

Rhinelander also announced the appointment of Francis Ratliff as research director and John Gaffney as manager of the technical service and product development department.

Dr. Crain has been research director of Rhinelander since 1954, when he joined the company. He had previously been general superintendent of Columbia River Paper Mills in Vancouver, Wash. Dr. Crain received his B.A. in chemistry and physics from Wooster College and his Ph.D. from the Institute of Paper Chemistry at Appleton, Wis.

Dr. Ratliff has been with Rhinelander's research department since 1957. He previously was research and technical director of the paper mill for Personal Products Corp. from 1951 until 1957.

Mr. Gaffney came to Rhinelander in 1940 as a paper chemist in the laboratory. In 1952 he became assistant technical director and technical control superintendent in 1954.

Scholarship Awards

Western Michigan Awards Six Scholarships

Competitive examinations were given to 36 high school seniors from Michigan, Ohio, Wisconsin and Illinois at Western Michigan University in competition for six scholarships in paper technology.

The awards include four for $500 annually, one for $400 and one for $300. All are renewable grants throughout the college career of the holder.

Those in the top six, in order, are: Alan Andrew Lawrence, Lodi, Ohio; Richard J. Egland, Kalamazoo University High; E. Geoffrey Meyer, Marinette, Wis., Catholic; Carl Eugene Steiner, Chippewa, Ohio; Douglas Lee Bockstanz, Kalamazoo Portage High; and John Frank Kratochvi, Berwyn, Ill., Marton High.

Mead Scholarships Go To Chillicothe Youths

Two Chillicothe, Ohio, high school seniors are this year's winners of National Merit Scholarships offered by The Mead Corp. They are the fifth and sixth winners of Mead Merit Scholarships in the four years since the program was instituted.

Both boys, Arthur Clayton Willis, Jr., and Carl Helmuth Schwalbe, are sons of Mead employees and were the only two Mead sons to qualify for this year's awards from those who took the qualifying examinations at schools in the more than 30 Mead plant communities. It marks the first time both Mead Scholarships have gone to boys in the same community.

Mr. Willis, 18, received the award for the outstanding son of a Mead employee. He is the son of Mrs. Velma O. Willis, who works as a paper sorter at Chillicothe Paper Co., a Mead wholly owned subsidiary.

Mr. Schwalbe, 16-year-old son of H. C. Schwalbe, a research chemist at Mead Research Laboratories in Chillicothe, earned the scholarship reserved for the top student in the 12 states where Mead has manufacturing operations.

Nekoosa-Edwards Scholarship Awarded

Susan Wood, daughter of Mr. and Mrs. Allen Orville Wood, and a senior at Potsdam Central High School, has been named the winner of a $500 scholarship award presented by Nekoosa-Edwards Paper Co.

Miss Wood plans to study music at the State University Teachers College in Potsdam.

The ward program, established by the paper company last year for its Potsdam, N. Y., mill employes and their children, provides one annual $500 award which may be renewed annually. In addition, a cost-of-education grant equivalent to the tuition but not exceeding $500 is presented to the New York college chosen by the scholarship recipient.

Scholarships Announced At Syracuse

The following scholarship winners have been announced at the State University of Forestry at Syracuse University:

The Boxboard Research & Development scholarship has been awarded to J. H. Dean of Troy, N. Y. K. B. Laffend of Syracuse is the recipient of the National Starch Products, Inc., scholarship for $2,000 which provides $500 a year for four consecutive years. The annual Mead Corp. award was presented to Ronald L. Benson of Syracuse, N. Y. Paul E. Parker of Nunda, N. Y., was awarded the A. E. Staley Mfg. Co. scholarship.

Other officers elected were M. G.

Modern Methods of Mechanical Pulp Manufacture

This book comprehensively covers all aspects of groundwood pulp production. The author, K. H. Klemm, has a broad knowledge of groundwood manufacturing methods and has been associated with groundwood mills on both sides of the Atlantic. Price: $5.00.

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PJT NEWS OF CONVERTERS

W. A. Kirkpatrick

A. J. Castle

New Corporation Acquires Kalamazoo Paper Box Co.

The Kalamazoo Paper Box Co. after more than 50 years under the same management, has been sold to a newly formed corporation, Kalamazoo Paper Box Corp. At the same time, it was announced by officials of the new corporation that the Acme Folding Box Co. had been purchased by it and is being merged into the larger operation.

The new corporation has been formed by William A. Kirkpatrick, former vice president of Allied Paper Corp., who recently has had his own papermill consulting service, and several associates. Mr. Kirkpatrick will be president of the firm.

Fibreboard Announces Two Promotions

Fibreboard Paper Products Corp. has appointed Eugene V. Gear director of its Creative Design Center. James J. Bauer was named general manager of the company's wholly owned subsidiary, Precision Electrotype Co., succeeding Mr. Gear. Mr. Bauer was manager, electrotype department, San Francisco plant, prior to his new appointment.

Mr. Gear's new offices will be at 1789 Montgomery Street, where the Fibreboard Creative Design Center is headquartered. Mr. Bauer will be at Precision's San Francisco general offices and plant at 1045 Sansome Street. "Peco" also has sales offices and a plant at 2165 South Yates Street, Los Angeles.

Castle To Head New Kaiser Research Dept.

Alexander J. Castle has been appointed head of a new aluminum foil packaging research department for Kaiser Aluminum & Chemical Corp., Charles M. Kinghorn, director of container research and development, has announced.

Mr. Castle, as manager of the foil division of the container research and development center in Chicago, will be responsible for a program to develop new end uses for foil packaging materials and to improve existing materials. The group will also provide technical, developmental and production services for customers.

Prior to joining Kaiser Aluminum in March, Mr. Castle was in charge of foil development for the Rap-In-Wax Paper Co., Minneapolis, Minn. In addition he has had five years of experience in packaging development with the aluminum industry and three years as a food technologist with the H. J. Heinz Co., Pittsburgh.

After receiving his BS degree in chemistry from Carnegie Institute of Technology, Mr. Castle did basic research for a year at the school's highly regarded Metals Research Laboratory.

Tabulating Card Mfrs. Elect Gaynor President

Announcement was made today of the election of Simon G. Gaynor, American Business Systems, Philadelphia, as president of the Tabulating Card Manufacturers Ass'n.

Other officers elected were M. G. Lewis, M. G. Lewis Printing Co., Jacksonville, Fla., vice president, and C. A. Greathouse, Frank H. Baxter Associates, Inc., executive secretary and treasurer.

Appointees to the executive committee are J. M. K. Davis, Connecticut Printers, Inc., Hartford, Conn.; W. R. Schween, Ennis Tab Card Co., Ennis, Tex.; W. Y. Starzman, Ansell-Simplex Ticket Co., Chicago, Ill.; H. F. Willert, Duplicate Forms, Mentor, Ohio, and Mr. Lewis. The next association meeting will be held on Wednesday, June 17th, in the offices of Frank H. Baxter Associates, Inc., 145 East 32nd Street, New York City.

Continental Can Div. Names Scribner Region Gen. Mgr.

Russell D. Scribner has been appointed general manager, Central region, for the boxboard and folding carton division of Continental Can Co.

Formerly manager of the division's Elkhart, Ind., plant, Mr. Scribner will now be in charge of all sales

R. D. Scribner

and production activities in the Central region. The territory includes sales offices at Detroit and Grand Rapids, Mich.; Cleveland, Cincinnati and Middletown, Ohio; Elkhart, Indianapolis and Evansville, Ind.; Chicago, Ill.; St. Paul, Minn.; St. Louis and Kansas City, Mo.; Dallas, Tex.; and Pittsburgh, Pa. It also takes in plants at Chicago, Ill.; Middletown, Ohio; and Elkhart, Ind.

Mr. Scribner replaces Charles A. Colbert, who has resigned to form his own business. Headquarters for Mr. Scribner will be in Chicago.

George Oechsle takes over as Elkhart plant manager. He was formerly assistant plant manager at this location and, prior to that, mill superintendent at the division's Piermont. N. Y., plant.

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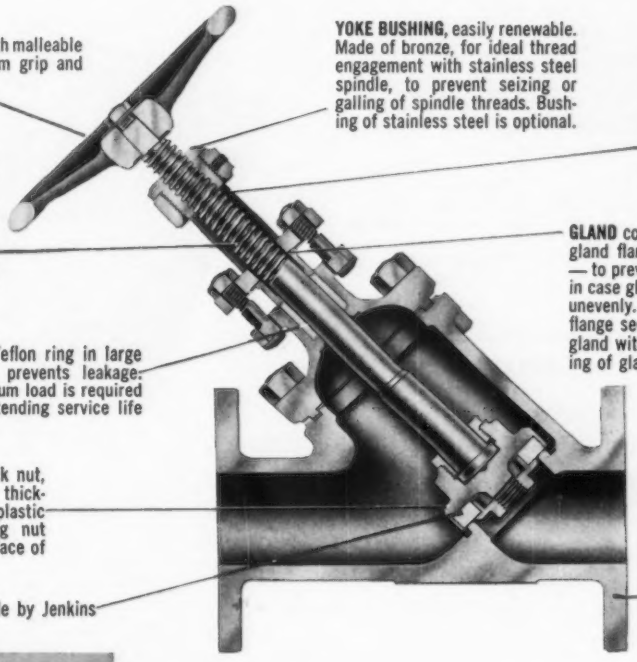

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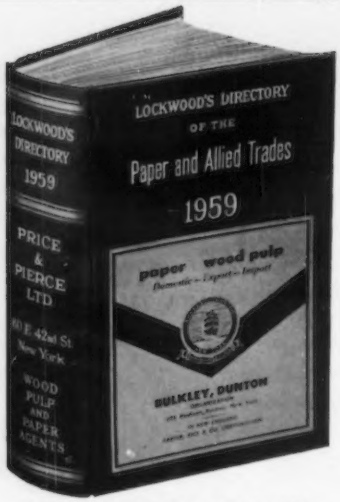

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Company, Officers and Operating Executives in geographic order.
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Products manufactured. Total production.
Mill Equipment and kind of power used.
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Telephone, Highways, U. S. and State route numbers.
In Canada: Kings and Provincial route numbers.
State and Provincial Maps keyed to indicate number of Pulp and Paper Mills in each City or Town.

MILL OFFICIALS
An alphabetical list of officers and operating executives.

LISTS OF NEW AND IDLE MILLS
CLASSIFIED SECTION
Products of pulp and paper mills and converters of paper and cardboard products.

CITY ADDRESSES
street addresses of U. S. and Canadian pulp and paper mills maintaining city offices.

PULP AND PAPER MILLS
IN LATIN AMERICA AND PHILIPPINE ISLANDS

CLASSIFIED LIST OF EQUIPMENT
AND SUPPLIES

CONVERTERS
of paper, board, moulded pulp, etc.

GENERAL PAPER MERCHANTS—
Geographically arranged and keyed.

PAPER EXPORTERS AND IMPORTERS
Geographically arranged.

RAGS AND PAPER STOCK DEALERS
Keyed to show stocks handled. Importers included.

RAGS AND PAPER STOCK CONSUMED
Kind and grade consumed by the mills.

PULP TESTERS

STATISTICAL TABLE

TRADE ASSOCIATIONS

WATERMARKS AND BRANDS—
Used in the American paper trade.

WOOD PULP TESTERS—
Importers and Exporters.

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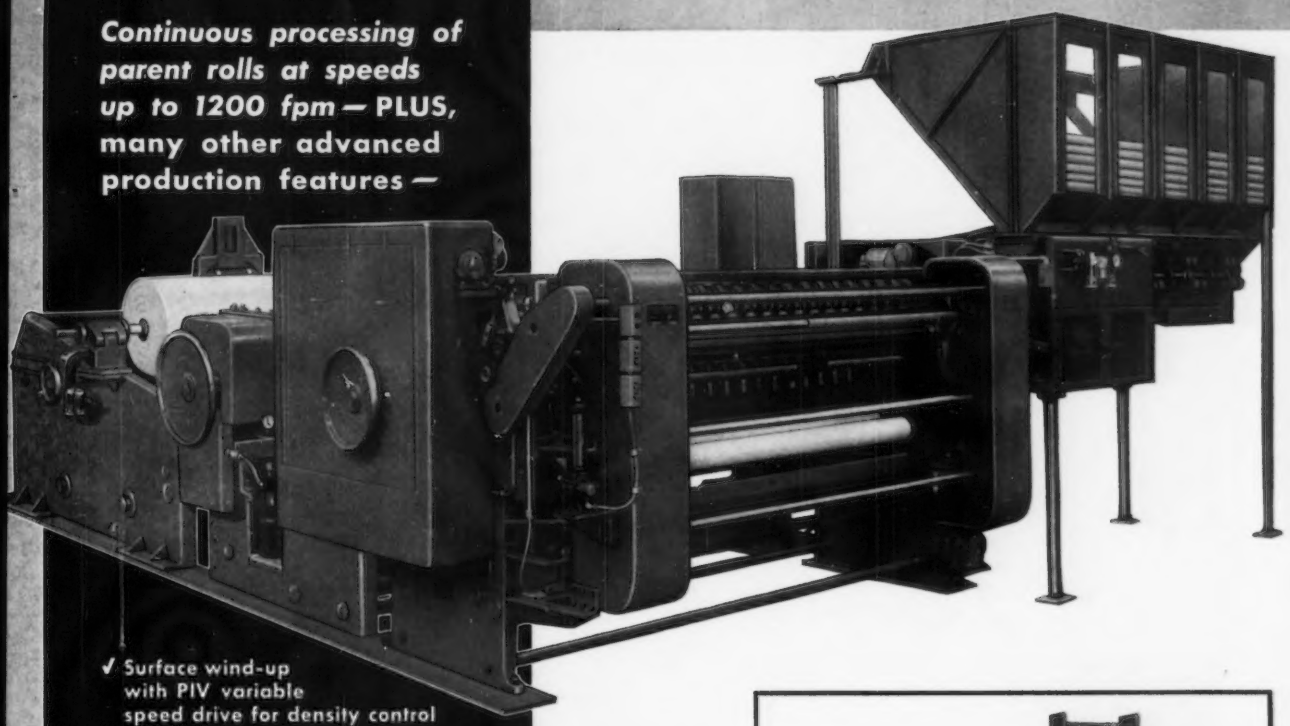

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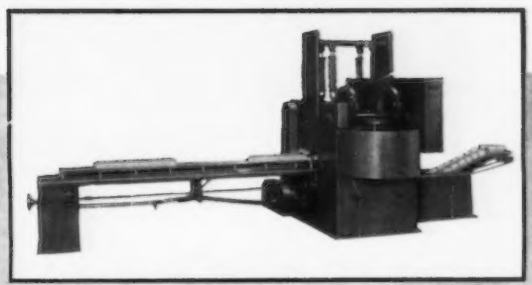

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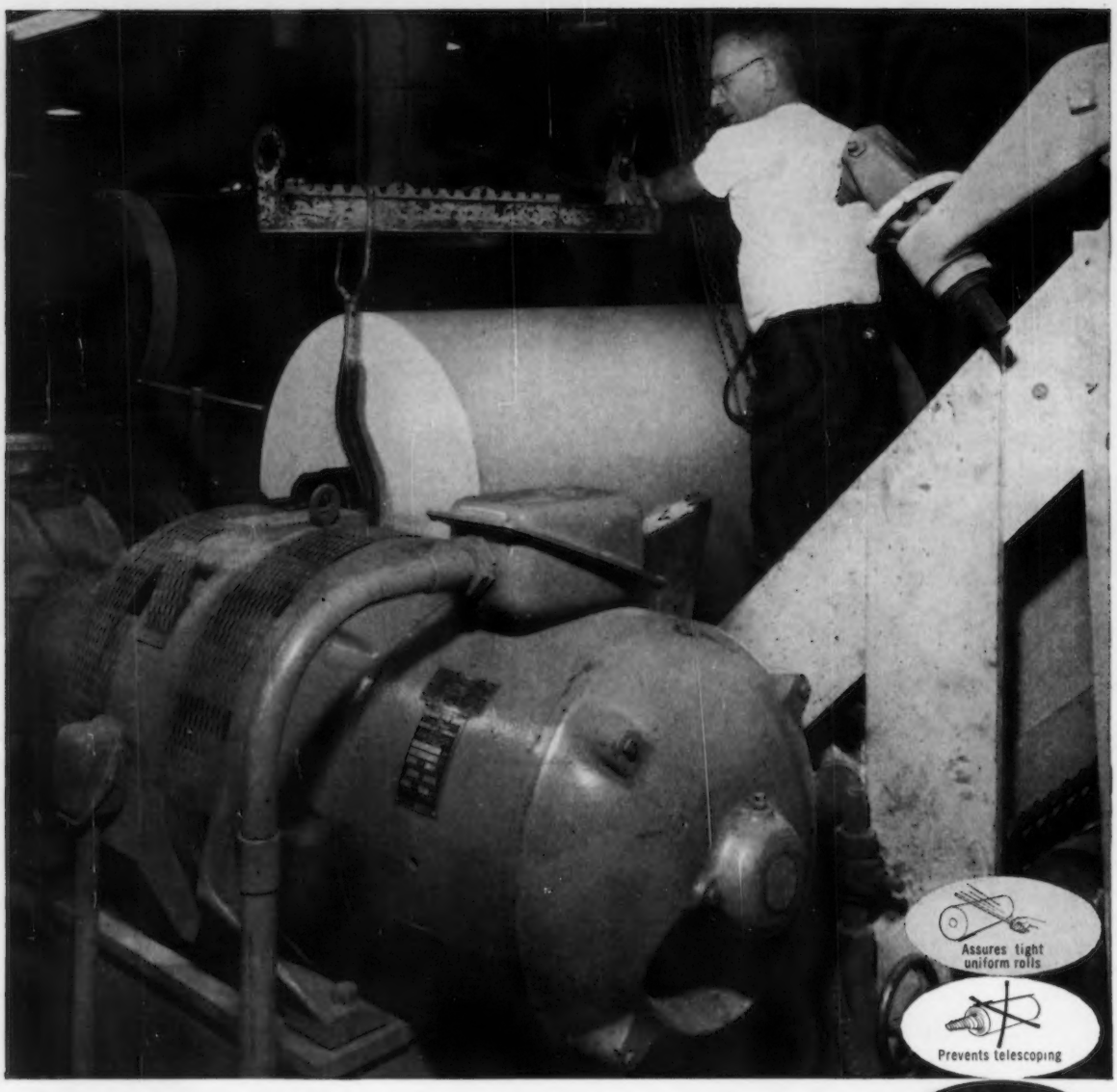

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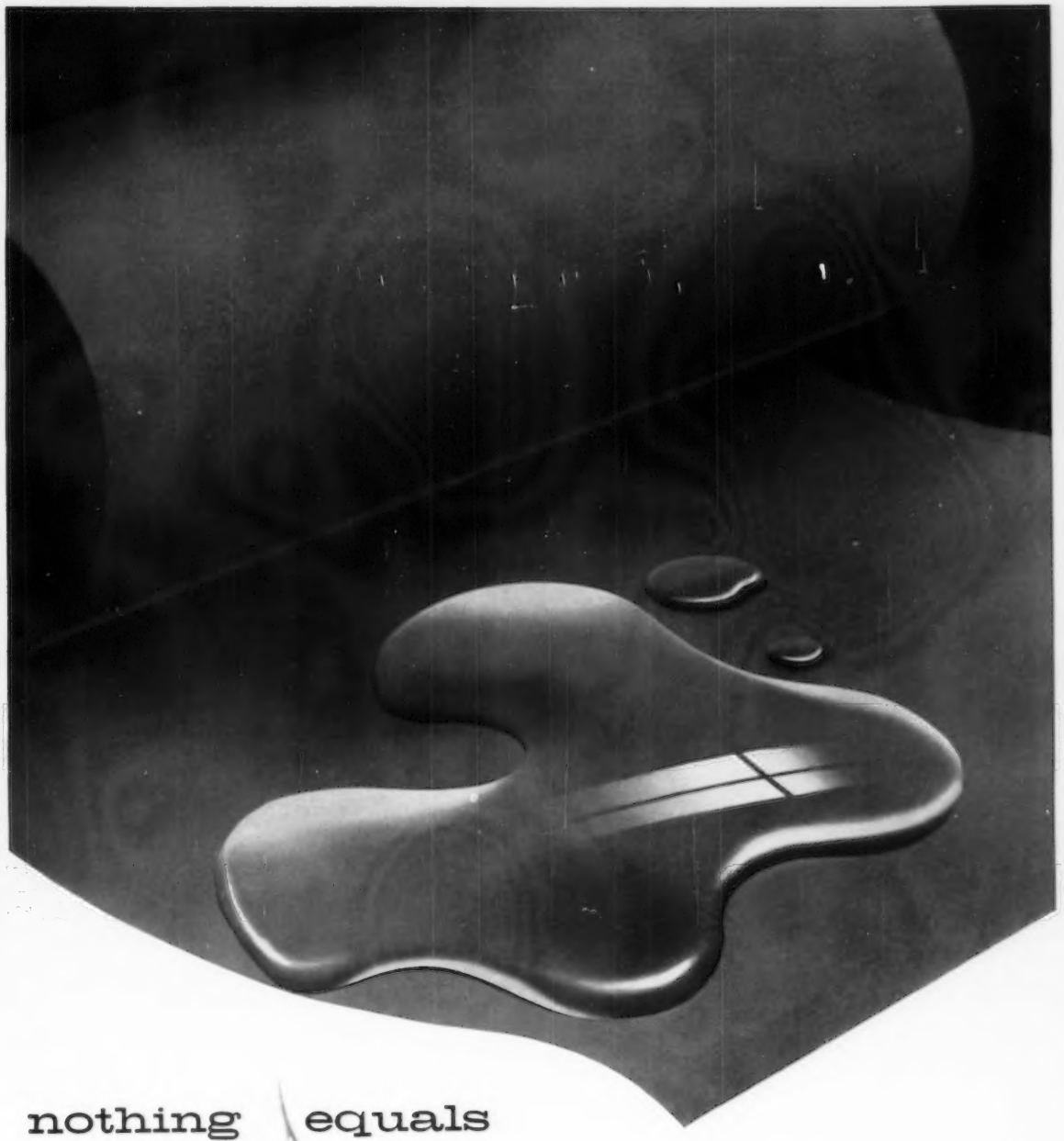

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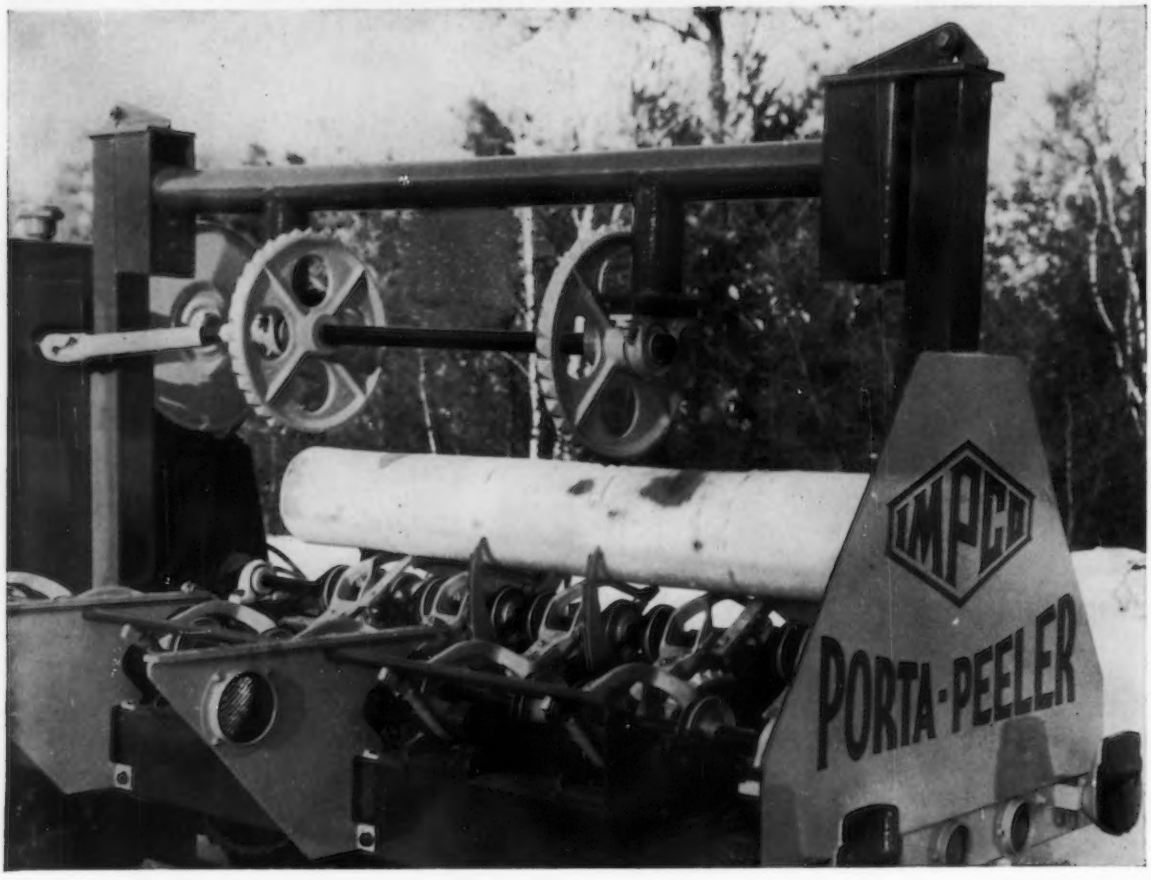

This is the Impco Porta-Peeler in action. Pulpwood contractors and users are receiving it with tremendous interest because of its efficiency and high capacity. Pulpwood suppliers can cleanly bark three to six cords per hour depending on log length. Crooked — knotty — frozen hardwoods — logs up to 26″ in diameter? No problem! Porta-Peelers can be completely mobile for wood road operation or permanently installed in wood concentration yards.

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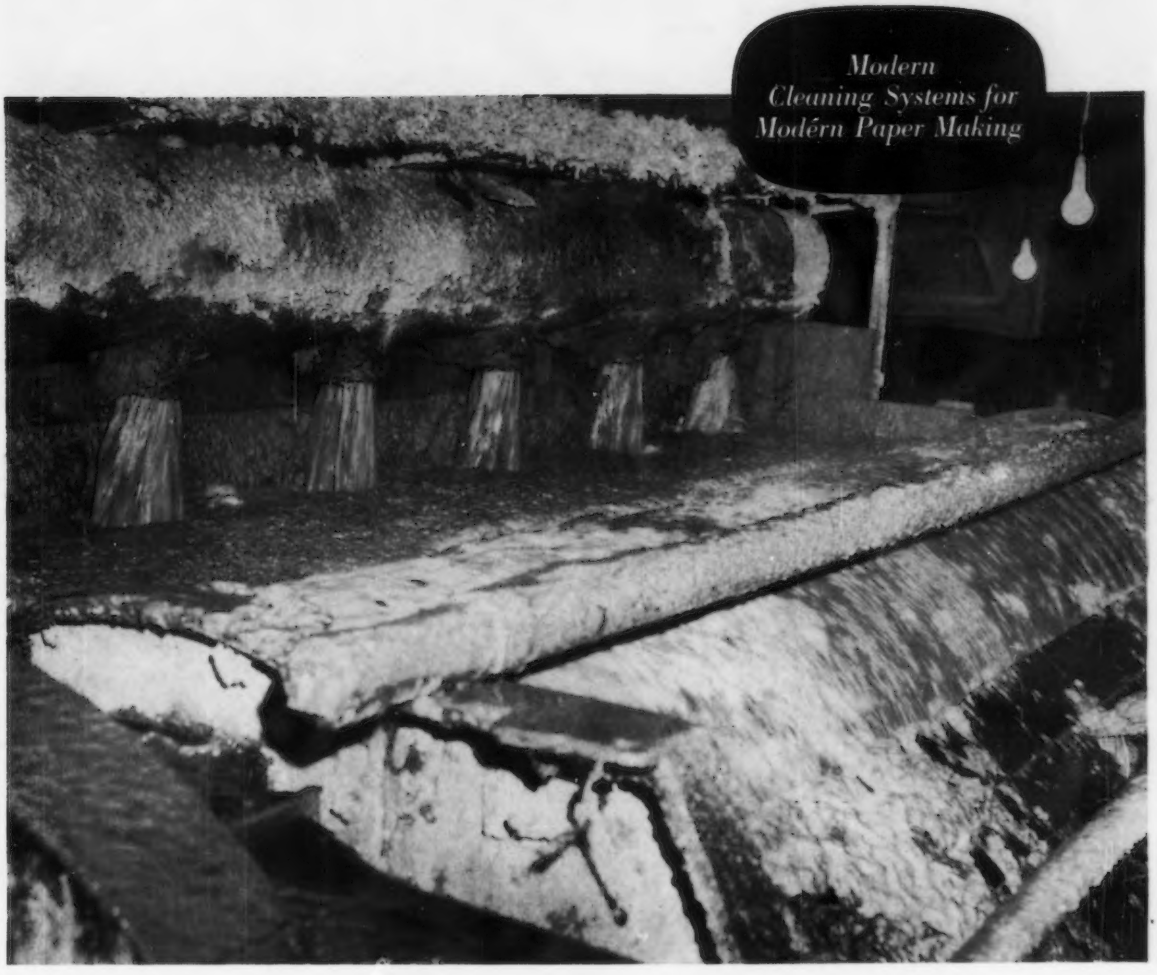

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The stock preparation system at one board mill had never had a real purging, so the Oakite man suggested a set-up for circulating a solution of Oakite Composition No. 45 through the whole system, starting with the beaters. First results were remarkable.

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The superintendent was amazed. Floating out of the head boxes onto the filter screens came great chunks of matter—scale, stock, size, lime, wax, alum. The system had been *that* fouled! Men had to rake away the rapidly accumulating debris. Aghast at the amount of soil, the superintendent ordered the rest of his cleaning solution dumped into the system.

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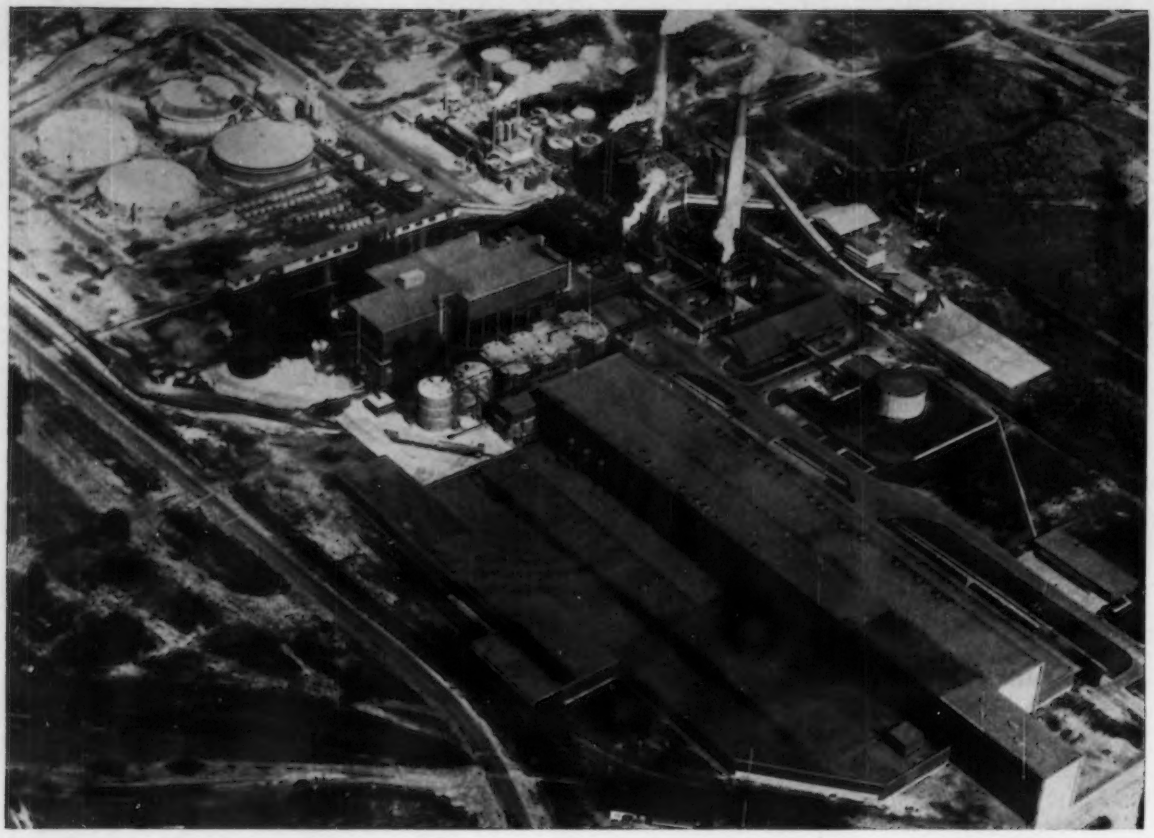


New Pulp Mill of Buckeye at Foley Has Many Unusual Features

Buckeye Cellulose Corp. recently completed the construction of a $20 million dissolving pulp and paper mill at Foley, Fla., its second such plant in that town. Last week one of PAPER TRADE JOURNAL'S editors visited this new mill to get information and pictures for the following articles. These comprise the most detailed description ever published on a North American dissolving pulp mill.

The new mill doubles the original capacity of Buckeye's Foley facilities. The new capacity is 200,000 tons of dissolving pulp per year or 266,000 tons of paper pulp. Buckeye, the only company in the industry producing dissolving pulp from both wood and cotton linters, operates a linter plant in Memphis, Tenn., with an annual capacity of 115,000 tons. The Foley and Memphis units give Buckeye a total capacity in excess of 315,000 tons per year. The company's capacity has tripled within the last six years, making it the fastest-growing producer in this field.

The original Foley mill, completed early in 1954, started production in June of that year with a capacity of 100,000 tons and represented a capital investment of about $30 million. An interim expansion completed in July 1956, raised capacity to 120,000 tons a year. The newly completed mill, boosting capacity to 200,000 tons a year, brings the total capital investment at Foley to $50 million.

The operations at Foley are extremely flexible. The plant can produce either hardwood or softwood dissolving pulps, or softwood paper pulps. The new mill is integrated with the original in a semi-independent tandem arrangement so that any two of the above grades of pulp may be produced simultaneously, or the entire output may, if it is so desired, be concentrated on one grade. This flexibility was a major consideration in the design and engineering of the new mill as described on the following pages.

Among the interesting features of the new mill is a double screening system prior to bleaching. With the new system, every fiber passes through at least two sets of screens before bleaching. Other interesting features include a special seven-stage bleaching process developed by Buckeye researchers and employed in both the new and the old mill; an

unusually high efficiency rate of more than 90 per cent on the recovery furnace gases; a hardwood barking system, new to the South; and a system for recovering lime in the sludge from the water treatment plant which makes the mill independent of outside lime purchases for all requirements. New techniques used in the construction management for this mill are detailed in a separate article.

New wood conveyor carries slash pine to the new barking drums.

Wood Consumption

Expansion of the Foley plant means a consequent increase in wood consumption. From 750 cords of pine pulp wood a day in 1954, the level has risen to 1,400 cords per day, 10-20 per cent of which are hardwood.

Buckeye's land holdings now total 800,000 acres of woods—an area slightly larger than the state of Rhode Island—compared to 570,000 acres owned in 1954. Most wood used at Foley is secured from sources other than the company's own forests:

70 per cent of pulp wood requirements are purchased from private lands;

10 per cent comes in the form of chips from saw mills;

20 per cent comes from Buckeye lands.

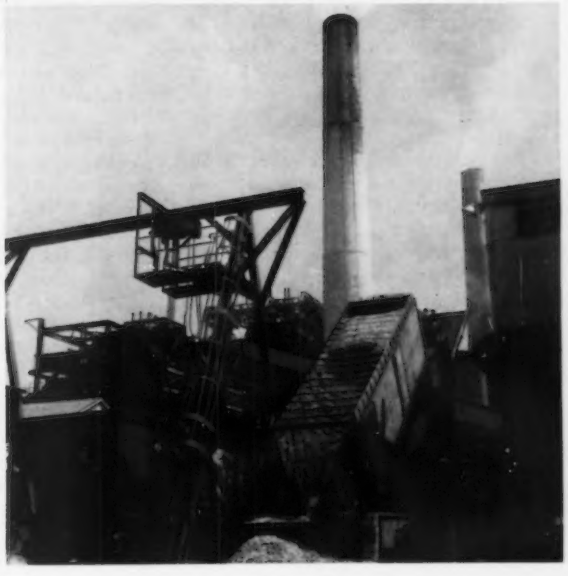
Feeding hardwood logs into the new mechanical barker.

Woodyard

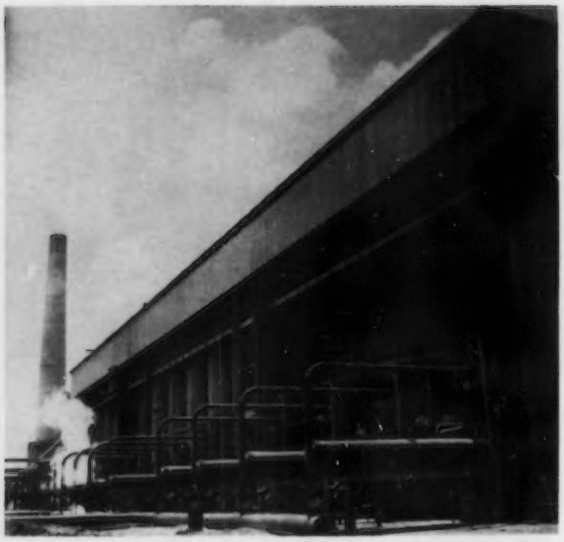
With daily wood requirements increased more than 86 per cent, additional wood storage facilities for 11,000 cords adjacent to, and for 5,000 cords within, the existing woodyard have been provided for the expanded operation. The company plan calls for turnover of the stored wood in 30 to 60 days. A new log conveyor from the new area loads a new barking drum (Fibre Making Processes, Inc.), from which the logs are conveyed to a new sorting belt on the extended sorting floor.

A new hardwood barker (Impco), with new infeed conveyor and outfeed conveyor discharging to the existing sorting belt, will be started when volume hardwood operations begin.

Although hardwood barkers are widely used in northern forestry operations, Buckeye's adaption required substantial re-designing. Available ring-type barkers were designed primarily for northern use to handle eight-foot logs; none would successfully handle the five-foot wood common in the South. Investigating existing mechanical barkers, engineers made first-hand observation of sev-



Dumper unloads a truck trailer load of chips into hopper.



New digesters are in the foreground. Heaters extend out to left.

Two large (36 inch) cyclone cleaners are first used on bleached pulp.

Washers on the operating floor of the new seven-stage bleach plant.

eral employed at various mills. After observing the Impco barker debarking frozen hardwood, they approached the supplier to discuss the problem of southern hardwood debarking.

By coincidence, Impco had itself been considering the design of a system that would feed five-foot wood. After discussions, it was agreed that Impco's and Buckeye's engineers would cooperate on the design of a feed works.

It was decided to use the Impco barkers on the recycle stream from the drums. This had the advantage of using the drum barkers as classifiers, thereby reducing total debarking requirements for the mechanical barker.

Toward the end of the project, Buckeye's engineers began working with Triangle Construction Co. on the design of a conveyor system for use with the new hardwood debarker. The objective was maximum mechanization so that the need for the operators' attention would be minimized. One operator was clearly necessary, but efforts centered on designing a system that would require no more than one operator. As finally devised, the conveyors are arranged so that logs removed from the sorting belt for additional debarking are conveyed to a variable speed accumulator. At this point, the operator controls the unit to keep the barker fully loaded. Debarked logs are then conveyed automatically to the sorting belt for re-examination.

Both the barker and the conveying system are equipped with variable speed drives, permitting maximum production despite barking difficulties.

Basically, existing facilities for log recycle, cull hogging, log splitting, chipping, chip screening, chip conveying and storage, handle the entire flow. Conveyors were speeded up, one existing chipper was converted, and a new chip silo was erected in order to accomplish this.

A new bark hog (Diamond Iron Works) was added to handle the increased bark load. Surplus bark will be conveyod pneumatically to a new conical type refuse burner (Rees Burner and Blowpipe).

New bulk chip handling facilities include: an hydraulic truck dumper (Kewaunee), a rail car shaker (Link-Belt), a receiving pit, a takeaway conveyor, and a 7,800 sq. ft. concrete storage mat.

The existing chip feeder conveyor under the chip silos was extended to pick up the new silo, and the existing conveyors carrying chips to digesting were speeded up to handle the higher load. The digester charging conveyor

was extended to include the five new digesters. The existing off type tripper was moved over the new digesters, and a new feed-through or off-type tripper was installed over the existing digesters. All new conveyors, conveyor conversions, and new tripper are by Continental Gin Co.

Cooking

Expanded operations of the digester department is by the addition of five 4,150 cu. ft. capacity stainless clad digesters (Chicago Bridge & Iron Co.). Each digester is provided with an indirect liquor heater (Downingtown Iron Works) and a Goulds liquor circulating pump. Chips are cooked in two stages in a modified kraft process. The first stage is an acid prehydrolysis using either water or dilute acid. The second stage uses a converted kraft cook.

Due to special lining techniques it is estimated that the life of the new digesters will be 10 to 20 years.

One digester is arranged for swing operation and the other four are permanently piped to the new two-charge blow tank and new entrainment separator (Hammond Iron Works). Associated with the blow tank is a heat accumulator tank with an internal direct contact condenser. (Chattanooga Boiler and Tank Co.) and an accumulator condenser water pump (Goulds). Operating in cooperation with the heat accumulator tank are two heat exchangers (Struthers-Wells) and a dirty water pump (Goulds).

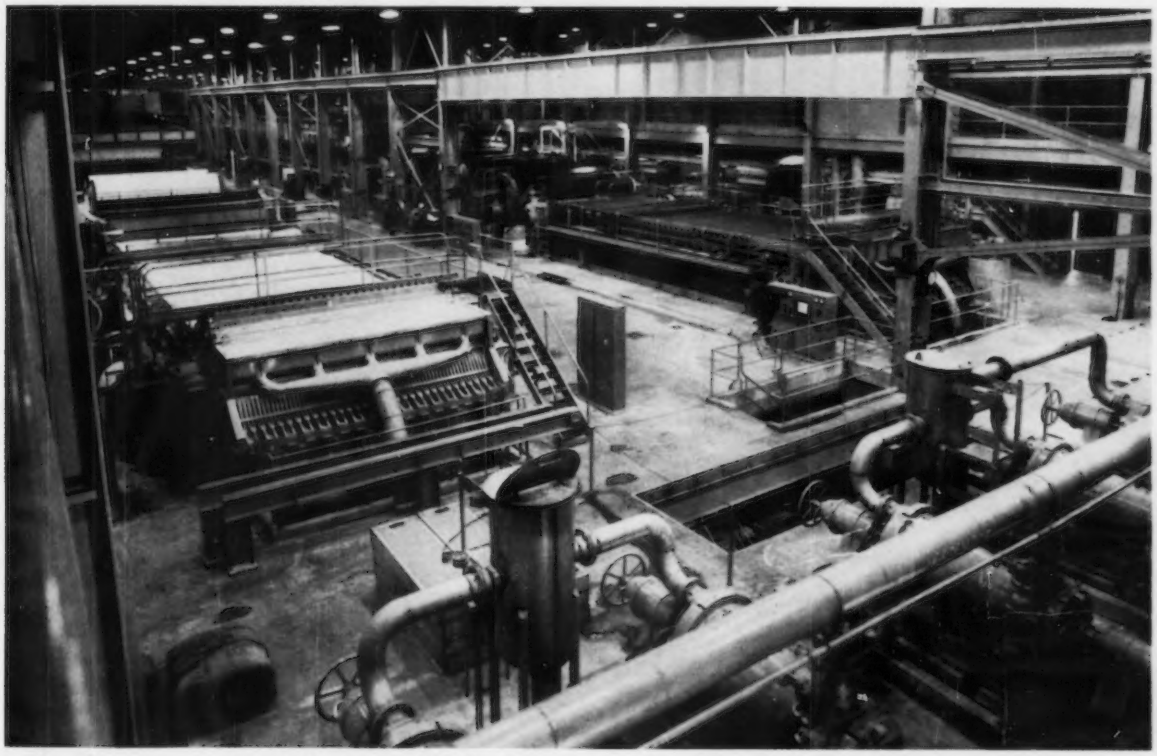
Two notable features of the new digester department are the integrated heat recovery system, made possible by special instrumentation, and the automatic cooking solution mixing system which mixes the cooking and black liquor for five digester charges at once. Operation of the integrated heat recovery system is made possible by the special instrumentation.

Other than that already mentioned, the only additional equipment is a Goulds hot water pump and a Goulds fresh water booster pump.

Washing and Screening

A Sandy Hill Kamyr knotter stock pump is V-belt driven through a dynamatic variable speed coupling and is controlled by a new Foxboro magnetic type flow controller. Three Bird Machine Co. Jonsson knotter screens are installed ahead of a three-stage Impco brown stock washing system. The associated liquor storage tanks and foam tower were built by Chattanooga Boiler and Tank Co. The various liquor pumps, and the white water pump, were supplied by Goulds. The three filtrate pumps are powered by 250 h.p., 2,200 volt grade-mounted, weather-protected Allis Chalmers motors.

A new double screening system used before bleaching consists of six primary and two secondary Impco Lindblad vibrating screens, one Impco flat screen, and four Impco centrifugal screens. Initial trial runs of the new mill showed the double screening system to be so effective that the same equipment was installed in the original mill. With the new system every fiber passes through at least two sets of screens before bleaching treatment. The new Impco valveless decker, which is driven through a dynamatic variable speed coupling, discharges stock to an Impco thick stock pump, which pumps to two 50-ton high density storage towers built by Chattanooga Boiler and Tank Co. The tile white water chest and primary screen stock mix tank were built by Chemical Linings, Inc. Stock from the high density towers is pumped to an agitated blending chest, built by Chemical Linings, Inc., where consistency of stock to bleaching is adjusted.



Pulp drying room has two fourdriniers. The new machine is the one on the right.

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Manager of Florida Operations

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Vice President and Manager
Cellulose & Specialties Division

C. B. Metz
Vice President of Sales

Bleaching

The new mill features a seven-stage bleach plant, with major equipment supplied by Impco. Eight tile-lined steel bleach towers consist of two low density upflow chlorine towers in series and six high-density downflow towers.

Both Foley mills employ a special seven-stage bleaching process developed by Buckeye's research department. Since its installation in 1954, the process has been continually improved, including the addition of two chlorine dioxide bleaching stages, the use of new chemicals, and the addition of auxiliary equipment for greater precision in the control of temperature and concentrations. Although details on this process are considered confidential, Buckeye believes that it is the only company in the industry using this improved technique.

For paper pulp production seven bleaching stages are used. These include: chlorination, hot caustic, two hypochlorite stages, chlorine dioxide, hot caustic and finally chlorine dioxide. In the manufacture of dissolving pulps the same stages are used with the addition of an acid souring stage at the end.

Tanks were built by Graver, and tile lined by Chemical Linings, Inc. Impco supplied all launders, circulators, and mining nozzles. On the bleach floor are seven Impco 9-foot 6-inch diameter by 14-foot face stainless steel washers. Washer seal boxes were built by Chemical Linings, Inc., and all dilution pumps were supplied by Goulds. Stock to bleaching passes through two rubber-lined Impco chlorine mixers, and stock from the washers passes through five Impco 500-ton stainless steel steam mixers, two Impco Hastelloy C chlorine dioxide mixers, and two Impco 400-ton thick stock pumps. On the washer following the sour acid softened water is used to prevent mineral pick-up. Softened water is used from here on for all dilution of the pulp through to the drying machine where softened water is also used in the fresh water showers.

All other stock pumps were supplied by Sandy Hill or by Allis Chalmers. All high density tower mining water pumps were supplied by Buffalo. Stock from the bleach plant is stored in two 42-foot diameter x 43-foot high tile Impco low density stock storage chests built by Chemical Linings, Inc. Circulators were supplied by Impco. All motor control center, washer hood, and comfort ventilating system are J. O. Ross. All major process piping is either stainless steel or lined carbon steel. Special linings used include rubber, polyvinyl chloride and glass.

Pulp Drying

Stock preparation for the new pulp drying department consists of two 36-inch Bauer Bros. Magna Cleaners (large cyclone type pre-cleaners), followed by a conventional Vortrap cleaning system (Nichols-Freeman). As in the original mill, stock is thickened over a valveless decker (Sandy Hill). The tile stock chest and white water chest were built by Chemical Linings, Inc.

The pulp drying machine (Sandy Hill) is 180-inch wide, with a Bertrams 64-pass multiple-manifold flow distributor supplying a 100-foot long conventional fourdrinier type wet end, followed by a suction couch, first suction wet press, four drum pre-dryer section, the second suction wet press and a smoothing press. The removable fourdrinier is entirely corrosion resistant. The whole fourdrinier, except the couch roll and the outside wire carrying rolls, rolls out on removable beams into the aisle as an integrated unit. This involves a minimum of operations by the wire changing crews and small hazard to the wire. All motions are by air motor. The table rolls are rubber covered and mounted in anti-friction bearings designed to permit both vertical and horizontal adjustment. The oscillating suction boxes are designed with a quick release fitting for connection to the vacuum system. An indicator on the fixed position wire stretch shows the amount of tension on the wire at all times.

Oscillating showers are used on the wire return rolls and on the knock-off showers.

A 30-inch lumpbreaker roll is complete with adjusting arms and pneumatic lifting and loading cylinders.

The press section consists of two suction presses with four 60-inch pre-dryers between and followed by one plain press. All are straight through presses designed for heavy duty and high nip pressures. The press arms are cast of ductile iron and the press framing is arranged for ease of felt changing. Control panels for the hydraulic loading equipment are located on the tending side.

The felt rolls are hard rubber covered. The vertical felt stretcher is operated by an air motor. The dryer section is divided into three sections with three driving pinions, the sections include a 48-dryer section, a breaker stock and a 13-dryer section. There are one 36-inch diameter lead dryer, sixty-one 60-inch diameter dryers, the break stock, a Sandy Hill cooling or air drying section, a draw press and a Roll Master constant pressure, constant speed reel. Non-oscillating doctors with quick lift mechanisms are installed on the first five dryers and the last top dryer in each section.

Spring rolls are mounted in adjustable spring brackets, one ahead of the breaker stack and one after

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Mill Manager

J. M. Williams
Industrial Relations Manager

the last dryer section. The breaker stack is designed for a nip pressure of 1000 lbs. per inch on the stack with hydraulic lifting and loading. It is equipped with a Mount Hope roll.

The Sandy Hill sheet cooler is located between the last dryers and the draw press. The sheet cooler consists of three perforated dryer size drums through which air is blown. The draw press consists of two heavy duty solid chilled iron draw rolls that carry the sheet from the drying section to the Roll Master reel.

The machine is driven by a Sandy Hill selective line shaft drive powered by a Westinghouse 400 h.p. D.C. motor. The machine hood and all air systems were supplied by J. O. Ross. Notable among the machine auxiliaries is the fourdrinier vacuum system which consists of four Nash Hytor vacuum pumps driven in tandem by an Allis Chalmers 1,000 h.p. 360 r.p.m. 2,300 volt synchronous motor.

To accommodate the increased drying capacity, additional storage facilities for 1,400 tons of jumbo rolls has been provided. Warehouse space has been increased by 80,000 sq. ft. of storage area, plus 2,400 sq. ft. of loading dock. Loading facilities for eight boxcars—four all weather and four outside—have also been added.

Finishing

The new finishing equipment consists of Lambs-Gray Harbor Co. backstands, cutter and layboy, roll rewinder, and bale conveyors. The new 2,600-ton hydraulic press was supplied by Washington Iron Works and utilizes Tennant automatic Twist Lock wire tying machines. Conveyors can be set for continuous operation with bales fed from the tying machines directly to the bale stacker, or they can be set to accumulate bales and allow intermittent operation of the bale stacker. Another feature of the combined system is that cut sheets from number one layboy can go to the number two finishing line *or* vice versa.

Causticizing

The new causticizing department, while generally similar to the existing, contains some departures from it.

The new oil-fired Allis Chalmers kiln is located alongside the existing unit which it duplicates, and is served by extensions from the old feed and firing houses. Notable features of the kiln installation are the

Chemical recovery area. Kilns are at the left with causticizing system behind them. Recovery furnace is at rear.

two Bird Machine Co. lime slurry centrifuges used in place of the original cylindrical vacuum filters.

One of the machines is used to dewater sludge from the cold lime softener, allowing recovery of lime ordinarily lost to the sewer, for reuse in the cold lime softener. Another feature of the new kiln is the variable speed induced draft fan driven through a Dynamatic coupling which is remotely adjusted from the firing panel to maintain proper combustion conditions continuously monitored by a Bailey oxygen analyzer.

Other major equipment added is as follows: green liquor and white liquor storage tanks built by Graver; green liquor indirect heater-cooler by Downingtown Iron Works which differs from the original direct contact heater, lime slaker-classifier built by Dorr-Oliver; three new stainless lined causticizing tanks built by Hammond Iron Works with Dorr-Oliver agitators and field-applied lining; white liquor clarifier and lime mud washer both built by Hammond Iron Works with Dorr-Oliver internals; lime and storage tank built by Hammond Iron Works with Dorr-Oliver agitator; and water treat sludge storage tank built by Hammond Iron Works with Mixco agitator and recarbonation injection piping. All diaphragm sludge pumps are by Dorr-Oliver. Centrifugal pumps were supplied by Goulds.

Another new system is the Davenport Machine and Foundry air cooler and the pneumatic conveyor to cool and transport reburned lime to the water treatment lime bins. The conveyor utilizes the existing Fuller lime unloading system for its operation. The new evaporation department uses a five-effect unit supplied by Chicago Bridge and Iron. All pumps are by Worthington.

Recovery Furnace

Steam requirements for the expansion have been provided for by the addition of a 550-ton Babcock and Wilcox chemical recovery boiler. Actual steam capacity is 285,500 lbs. per hr. at 600 p.s.i. and 750° F.T.T.

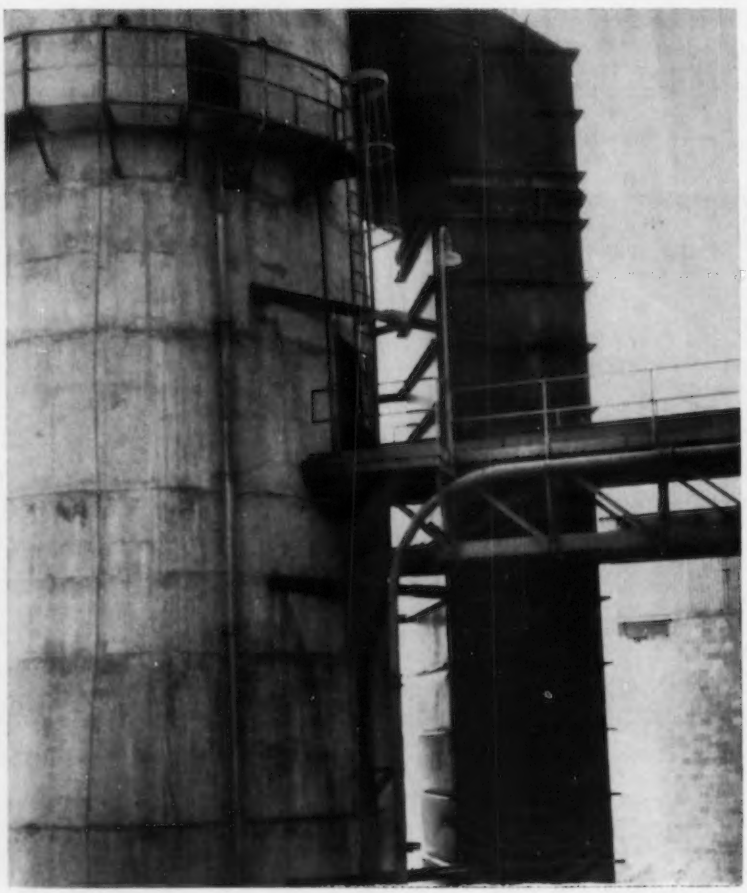
Among the features of the new boiler is the Venturi evaporator-scrubber system which takes the place of the cascade evaporators and the electrostatic precipitator which were used on the original recovery boiler. The unusually powerful induced draft fan necessitated by the 38-inch draft loss across the Venturi scrubber system is an American Blower 835 r.p.m. compound type with all rotating parts of stainless steel and with Corten housing. The fan is driven by 2,700 h.p. 5,000 r.p.m. General Electric back pressure type steam turbine. The horizontal economizer and vertical gas air heater are provided with a shot cleaning system. The original recovery boiler was not provided with a gas air heater. The new stack is 225 ft. brick lined concrete with the unusual feature of having salt cake storage facilities in the base. It was designed and erected by Rust Engineering Co.

The exhaust steam from the 10,000 kw. turbogenerator and from the induced draft fan turbine supplies the new 50 p.s.i. header which serves the new pulp drying department, and ties into the old 50 p.s.i. header serving the original pulp drying department and both bleach plants. The new header has steam makeup through a new pressure reducing and desuperheating station. Two additional new pressure reducing and desuperheating stations supply makeup for the 50 p.s.i. header to the new black liquor evaporators and for the extended 150 p.s.i. digester steam header.

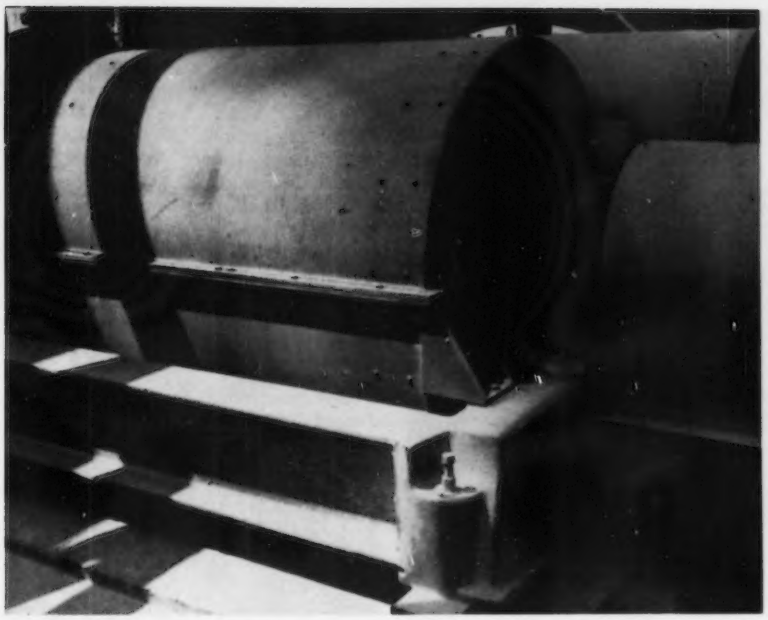
Power Generation

Power requirements for the expansion have been provided for the addition of a 10,000 kw. General Electric non-condensing turbine driven generator. Capacity of the purchased power tie is unchanged. Total plant generating capacity is now 26,600 kw. at 85 per cent P.F.

Power distribution for the new equipment has been provided by installing two new, and extending four existing, 12.47 kv. feeders for a total of nine in the entire plant. Fifteen new Allis Chalmers substations have been installed, adding a connected capacity of 15,000 kva., for a total of 35 substations with a total connected capacity of 35,500 kva. Twelve of the new substations are 480-volt secondary type for low voltage motor control, lighting, instrumentation, welding supply, elevators, and cranes. Three of the new substations are 2300-volt secondary type for control of motors larger than 200 h.p. All



Bottom of new chimney provides saltcake storage so breeching (right) enters 70 feet above ground.



Centrifugal filter is key to the lime recovery system. (See separate article on this which follows).

but three of the new substations are located indoors in ventilated control rooms. Power for the new wells is provided by a 12.47 kv. pole line and individual banks of 100 kva. transformers.

Motor control centers are Square D and all but five are located indoors in ventilated control rooms. Three are outdoors, and two are indoors in operating areas. Motors are generally squirrel cage induction type, of totally enclosed chemical construction. Motors 200 h.p. and below are 480 volt and were supplied by Westinghouse. Those 250 h.p. and above are 2300 volt and were supplied by Allis Chalmers. The notable variations in motor type and construction are the paper machine drive motor, vacuum pump drive motor, main mill water pump drive motors, and liquor pump drive motors in the brownstock washing system.

Water

Water requirements for the expansion have been provided for by extensive additions to the water supply and treatment facilities. Three new wells with a combined capacity of 26 million gals. per day were drilled by Layne-Atlantic, who also supplied the pumps. The new well line is composed of 10,000 feet of 42-inch and 2500 feet of 36-inch Lock Joint 150 p.s.i. prestressed cylinder type reinforced concrete pipe, and is sized to permit the later addition of two wells.

The original No. 1 well, which is located inside the plant property itself, abandoned as a full capacity well, was converted for use as the potable water supply source.

A new 125-foot diameter wirewound prestressed concrete cold lime softener was designed and erected by the Crom Corp. and essentially duplicates the original. Softener internals are by Graver. The softener is provided with a wood cover and has automatic desludging controls. New chemical feeding equipment was installed. Included are three pneumatically paced Omega continuous weighing feeders. Two feeders replace existing Omega intermittent type units over existing slakers and one was provided wiith a new slaker to serve as a swing unit.

Also added were two Builders Iron Foundry chlorinators for the treatment of all water flow through both softeners, and one new Wallace & Tiernan silactor to serve the new softener. Water from the new softener passes through two American Well Works in-line type recarbonators duplicating the original.

A new 2 million gallon wirewound prestressed concrete reservoir with integral concrete shell dome was designed and erected by The Crom Corp. and duplicates the original. Two new Goulds 10,000 g.p.m. 150 ft. head main mill pumps, powered by two 500 h.p. Allis Chalmers grade mounted weather protected motors, supply general service water through a new 36-inch cast iron and carbon steel water supply line. Two new Allis Chalmers filter supply pumps powered by Westinghouse TEFC motors supply additional water to the expanded ion exchange plant through a new 14-inch cast iron header. Nine new 10-feet diameter Belco sand and gravel pressure filter, one new 10-feet diameter Graver acid cation exchange unit, three new 10-feet diameter Graver sodium cation exchange units, and two new 10-feet diameter Graver anion exchange units were added to gain the necessary capacity increase in the ion exchange plant.

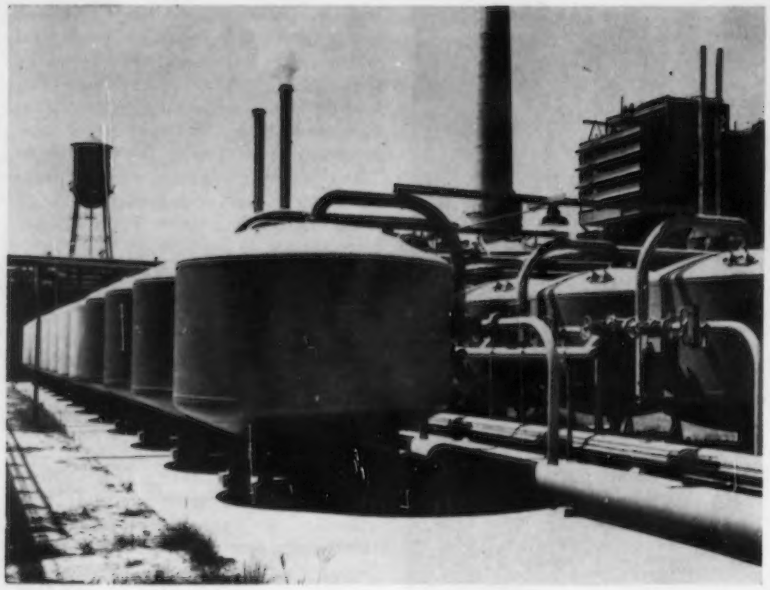
In addition to these a new sodium backwash sump with controls was installed so that it is possible to regenerate one of each type ion exchanger simultaneously. Soft water for the expanded plant is handled through a new tile storage chest, soft water pump, and soft water header. A new boiler feedwater pump was added at the existing demineralized water storage chest.

Instrumentation

Increased compressed air requirements were provided for by the addition of a new 100 p.s.i. 450 c.f.m. Worthington horizontal single cylinder, single stage, double acting air compressor, driven by a 100-h.p. motor.

Instruments for the new boiler and black liquor evaporators were provided for by the addition of a 90 p.s.i., 180 c.f.m. Worthington horizontal single cylinder, single stage, double acting air compressor driven by a 40 h.p. Worthington steam turbine. Increased process instrument air was provided by the addition of two 100 p.s.i. 160 c.f.m. Gardner-Denver single cylinder, single stage, double acting non-lubricated carbon ring type air compressors driven by 40 h.p. motors.

Generally Foxboro instruments were used in the process departments. Remote flow recorders, some temperature recorders, gas analyzers, computing relays and manual loading stations were by Bailey Meter Co., who supplied the instrumentation for the recovery boiler. Multipoint temperature recorders were by Honeywell. Pneumatic temperature transmitters were by Moore Products. Standard control valves were De Zurick with Bailey positioners, and consistency transmitters were De Zurick in-line type Butterfly valves were supplied by Continental Equipment Co.



View of pressure filters which are part of water treatment plant.

Background Information on Buckeye

Buckeye Cellulose Corp., a wholly owned subsidiary of Procter and Gamble Co., began business in 1901 as the Buckeye Cotton Oil Co. It was established by Procter & Gamble to provide cottonseed oil for use in P&G products. Subsequent research centered on developing commercial uses for the short fibers, linters, which cling to cottonseed after ginning.

During World War I Buckeye supplied linters for use in the manufacture of gunpowder. Later, research adapted linters to peacetime use, and the Memphis pulp plant was started in 1920. The company soon became a major supplier of linter pulp for the then-infant viscose, acetate and nitration industries.

During the next 30 years, as dissolving pulp industries grew in size and number, Buckeye found it increasingly difficult to obtain sufficient supplies of linters to meet customers' needs. The company, therefore, turned its interests to a second source of raw material, the forest. Thus, in 1954, when the first Foley mill began operation, Buckeye added to its distinction of being industry's oldest supplier of cellulose pulps for chemical uses and became the only producer of this from both linters and wood.

In 1959, because of the versatility of the two Foley mills and the Memphis linter plant, Buckeye has the capacity and processes to produce dissolving pulp for every industrial application. In addition, the Foley mill produces a full line of bleached and semi-bleached kraft paper pulps.

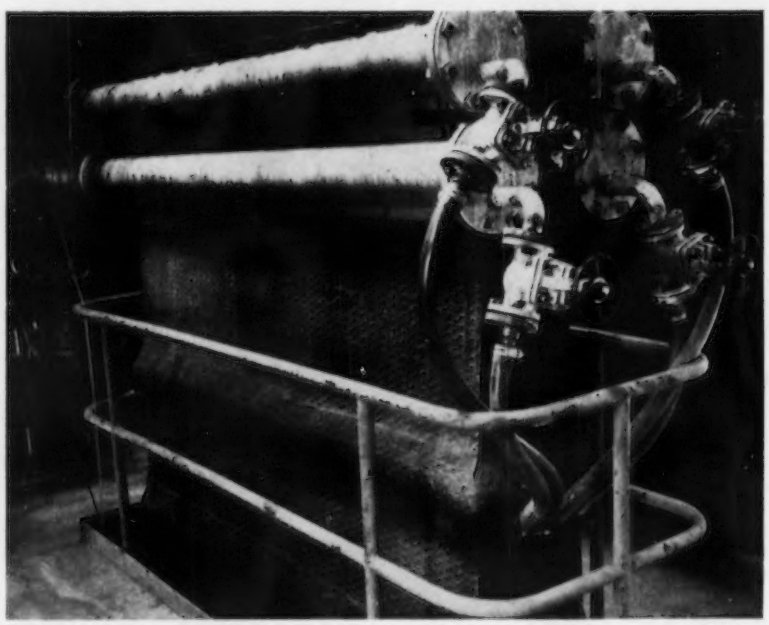
Research Key to Growth

Extensive research, reports Buckeye, has been a major factor in its rapid growth during the last six years. Buckeye's Memphis operation has one of the largest and most complete research centers in the pulp industry. More than 200 persons are employed in the research and development program. The Memphis laboratory building has some 43,000 square feet of floor space plus pilot plants and storage areas. Several pilot plants duplicate the Memphis and Foley processes as well as customer end-use processes on scales ranging from 1/3,000 to 1/200 of actual size.

The prehydrolized kraft process used at Foley was developed in the Memphis labs.

Last year when five tire cord producers formed an industry group to produce and promote a new super-strength tire cord, Tyrex, specially-formulated pulps played a key role. Buckeye contributed significantly by developing and supplying to the Tyrex producers a wood pulp said to have the highest alpha-cellulose content of any commercial wood pulp.

In recent years, the increased use of synthetic textile fibers in fabrics has brought a serious decline in the available supply of pure cotton rag for fine paper production. Buckeye researchers developed a method for chemically altering the cellulose molecules in cotton linter pulp which they report so enhances the paper-making properties of linter pulp that it may be used as a general replacement in many papers formerly requiring cotton rags.



Closeup of Venturi scrubber on recovery furnace into which re-circulated and makeup liquors are sprayed into the system.

Recovered Lime from Water Treatment Supplies Entire Requirements at Foley

Production of its own lime requirements are realized by Buckeye Cellulose Corp's Foley mill through a new fully integrated water softening and lime recovery system. The new system was installed during construction of the second mill.

Advantages

Specific advantages of the process include:

1. *Financial*—Lime yield is of sufficient quantity and quality to replace about 50 tons per day which would otherwise be purchased. In addition to savings of up to $5,000 a month, it is expected that the plant may eventually gross about $1,000 a month from the sale of surplus lime.

2. *Operating Efficiency*—The new system completely eliminates sludge disposal problems, including the maintenance lagoon area needed for the settling out of sludge.

3. *Manpower*—Employees needed for the periodic removal of dried sludge from lagoons can be assigned to other work.

Water used at the Foley installation has a relatively high hardness rating of more than 200 parts per million. The plant uses a cold lime water softening process that produces about 100 tons of calcium carbonate sludge per day. Major impurities are magnesium and iron. The new system removes 60 per cent of the magnesium and 60 per cent of the iron at the expense of only 20 per cent of the calcium.

When Foley's first mill was designed, the use of recovered sludge as a raw material for the production of lime to meet plant needs was considered; however, action was deferred in the face of technical problems involved.

Chief Problem: Magnesium

The principal problem was the reduction of the level of impurities, particularly magnesium compounds, so that concentrations would be low enough to avoid difficulties elsewhere in the process.

At Foley, sludge contained from three to six per cent magnesium compounds in the dry solids. Reburning of untreated sludge would have resulted in a rapid build-up of these compounds in the lime since each successive re-use of recovered lime would precipitate additional magnesium compounds from the water being softened. Thus, magnesium concentration would soon be sufficient to disrupt water treatment and causticizing processes, and possibly contaminate the pulp.

Buckeye's engineers decided that successful sludge dewatering and purification could be accomplished with a centrifugal filter (Bird Machine Co.). Data suggested that dewatering to roughly 35 per cent moisture would remove impurities and provide good recovery of sludge materials.

Three-Stage Process

After an extended series of experimental runs under various conditions of operation, Buckeye's engineers devised a three-stage process:

1. Carbonation of sludge with stack gas from the lime kiln to dissolve magnesium compounds and improve centrifuging characteristics;

2. Dewatering and purification of sludge by selective recovery of calcium carbonate in a Bird continuous centrifugal filter, removing the impurities with the water;

3. Calcining recovered sludge in regular kiln along with a portion of the lime mud from causticizing operations.

Initial estimates indicated that the process would produce lime of sufficient quantity and quality for both water softening and "makeup" in the causticizing department. Preliminary trials were highly successful, and Buckeye's dependence on outside sources of lime was all but eliminated. Further efforts ended sludge losses not connected with the new recovery system, thereby making Buckeye self-sufficient in the matter of lime supplies.

The system operates as follows:

1. Cold lime water softening sludge is pumped from the bottom of the softener into a sludge tank, where it is agitated and carbonated by passing kiln flue gas through it. This also serves as a surge tank to supply the recovery system with a continuous stream of sludge, since the softener discharge is an intermittent one.

2. From the sludge tank the slurry is pumped directly to a Bird continuous centrifugal filter, which dewaters and selectively removes undesirable minerals (compounds of magnesium, iron, aluminum, and manganese).

The filter generally dewaters a slurry containing about 10 per cent dry solids to produce a cake containing a minimum of about 60 per cent dry solids. The efficiency of the total recovery of solids must be adjusted to provide sufficient purge of impurities, but it is possible to recover up to 80 per cent of the lime sludge while maintaining the concentration of impurities at a permissible level in the reburned lime.

3. Following centrifugal dewatering and separation of impurities, the sludge cake is fed directly into the rotary kiln where it is calcined along with a portion of the lime mud stream from the causticizing plant.

4. After calcination, the lime is cooled and conveyed to storage. Lime recovered from the water treatment operation and from the causticizing plant are stored together, and the common source supplies the needs of both departments.

New Construction-Management Plan Cuts Cost of Buckeye Mill 10 Per Cent

The Buckeye Cellulose Corp. and its parent company, Procter and Gamble, have carried on a multi-million dollar expansion program each year since World War II. Because of this large amount of new construction each year, both firms have paid a great deal of attention to the method in which the various projects have been carried out. Many different construction management techniques and owner-contractor relationships have been investigated and tried in an effort to secure better control of the new construction in the light of the ever-increasing cost of labor and materials.

With the inception in 1956 of the project which was to cover the expansion of the Foley, Fla., plant it was decided that still another change in the construction management techniques should be tried. Although the company was not dissatisfied with the original construction project in 1952-54 at Foley, it was felt that a better job could be done if a better method of operation for the job could be devised. Such a plan was formulated and put into effect.

Measures of Success

With the construction of the additional facilities at Foley now about complete, the company feels that a major stride forward in the field of minimum cost construction was achieved through the new plan. The job has been successful as measured by the following:

1. Compared with estimates prepared from the costs of the original construction at Foley and then indexed to date to reflect labor and material increases, a 10 per cent saving in cost was realized.

2. The schedule of completion given the company in 1957 was comfortably met, with little overtime in the field having been expended.

3. The initial startup of the new departments has been relatively trouble-free. Thus far, only minor modifications have been necessary in order to make these departments full-operating units.

The following items contributed to the success of this project:

Job Broken Into Components

The engineering and construction phases of the job were broken into distinct components, and different firms were contracted to handle each of the components.

Past experience had shown that it was difficult for one contractor to give the company the quality of work and the degree of economy it sought, while handling a project over $15 million in size. Generally the primary difficulty was the inability of the contractor to secure enough competent and compatible people for the one job.

In design, there contractors were used. The Sargent and Lundy Co. was awarded the design of the power plant addition. The remainder of the engineering was divided between two firms—Lummus Co., and Triangle Construction Co.

For the construction phase of the project, the latter two firms acted as general field contractors. Each handled the construction of the portion of the plant it had designed, with the Sargent and Lundy work being absorbed in the field by Triangle Construction Co.

Joint Managerial Positions

Company and contractor personnel were jointly assigned to the key managerial positions in both the engineering and construction phase of the project.

This departure from usual job organization was the result of having found that it is extremely difficult, or almost impossible for any contractor, or contractors, in a two-year period to learn enough about the owner's requirements concerning a finished plant to be able to give the owner exactly what he wanted.

The knowledge of this difficulty was not new, but previous attempts to solve it by the use of audit-type resident engineers had not been completely satisfactory, primarily due to the difficulties of communication between one man and entire contractor's organization. For this particular project, company people with previous experience were available and the type organization used allowed them to insert into the job this previous experience.

How It Was Organized

A brief look at how the engineering and construction phases were organized will better explain this point:

First, it was decided that the fundamental engineering portion of the work of both contractors, work which included all layouts, flow sheets, capacity studies, and equipment specifications, would be accomplished at Buckeye's engineering offices in Memphis.

The production engineering work, however, was to be handled in the respective offices of the three contractors; in the case of Lummus, New York; Triangle, Foley; and Sargent and Lundy, Chicago. Then the unique combination of contractors' engineers and Buckeye's engineers, or in the case of Sargent and Lundy and the power house, P & G engineers, was established. Buckeye personnel were assigned a particular design area. Each contractor assigned a project engineer to work with this Buckeye man. The contractors' personnel came to Memphis and stayed there during the entire fundamental phase of the work. These men were divorced from all other company responsibilities during this period.

For six months they worked side by side, with the Buckeye man taking the lead in his area, a natural development due to the experience of these Buckeye engineers in pulp plant design. Each group had its own supervisor. In Memphis, design questions and alternates were answered and standards of design were established.

To insure continuity and standardization of design between areas, weekly meetings were held with all personnel in attendance. The combined organization functioned as a team and not as individual members of the owner's or contractor's firms.

Piping, instrument, electrical, and building specifications were all established during this period in Memphis. All equipment was specified and specifications were subsequently sent to Cincinnati to be purchased by the Buckeye purchasing division.

At the conclusion of this fundamental engineering phase, each contractor moved his now-trained key personnel back to his home office. Here other engineers and draftsmen, working under the now-trained project engineers, began the detailed design and drafting on a task force basis. Again, with very few exceptions, all people were assigned to this one project only. During this stage of the work the contractors' project engineers took the lead with their Buckeye counterpart now responsible only for follow-up on the finished design and that consulting which was necessary.

To insure constant liaison, Buckeye engineers moved to New York and Foley to act as resident engineers in charge. The experience gained by the contractors' men allowed design to move along rapidly. In January of 1958, seven months after detailed design began, engineering was closed out completely.

Key to the success was use of full time resident liaison engineers in all planning, design and construction stages. As a result, the job proved to be one of the best staffed, with maximum utilization of resources.

Construction Organization

On construction a similar organization was set up. Buckeye and contractor personnel were jointly assigned at all key positions, from project manager down through area superintendents. Early in the field work, this team of men devised the schedule, the code of accounts, the job estimates, and the other necessary details of the job. Soon a closely working contractor-owner team evolved. A firm relationship was developed early which led to a team concept throughout the entire project in the field.

A planning program was developed by this team to maintain low cost construction on the job. A Buckeye planning engineer was added to the team at an early date and the planning and scheduling concept was introduced as soon as ground was first broken. It was this planning and scheduling phase of every day's work that the Buckeye engineer proved the greatest worth.

The actual physical field work was the contractor's responsibility and to keep a tight organization, a hands-off policy on this construction responsibility was developed in the field on the part of Buckeye engineers. As the job staff grew, the Buckeye resident and construction superintendents proceeded jointly to handle all scheduling of meetings in the specific areas.

The feeling of the team concept developed so strongly that when on certain occasions it was necessary for the construction superintendent to be absent from the planning meeting, the Buckeye resident engineer felt no compunction in running the meeting himself. The mutual feeling of responsibility led to a smooth operation at near minimum cost.

At the end of the project, and without any disruption, the field teams easily absorbed a third member—the Buckeye pre-startup engineer, who followed carefully the completion of each phase of field work and who had, after seeing that the design was followed in the field, the responsibility of turning over the department to the plant manufacturing group.

Full Time Responsibility

Buckeye and the contractors assigned full-time personnel to all positions of responsibility on the project.

Previous experience again indicated that lost time, effort and money resulted when any part of a job had to be run under absentee or part-time management, either on the part of the company or the contractor. This type of management was never felt to be desirable, but its use was the result of having to use a few top personnel to supervise projects at the generally widely separated locations of business of both the owner and the contractor.

The same difficulties were encountered on the Foley expansion, but they were overcome because of the availability of experienced Buckeye and contractors personnel, and because each phase of the project was handled at the physical location where it was felt that maximum efficiency for that phase would result.

Thus, fundamental engineering design was accomplished primarily in Memphis; production engineering, on a task force basis, in New York and Foley; full construction supervision and accounting at Foley; major purchasing in the company's purchasing office in Cincinnati; and local purchasing in the field office at Foley.

Results Obtained

The results now realized from the above management techniques were as follows:

1. The job proved to be one of the best staffed in terms of competent and adequate people that the company has obtained to date. Because of this, the attention to the fine details which really determined the cost of the job was excellent.

2. The team concept developed throughout the job resulted in a working relationship between contractors and the owner which was almost ideal and which was certainly conducive to the best minimum cost type plans from both groups. The owner-contractor relationship became one of joint effort, rather than that of contractor and auditor. This single fact eliminated the need of the contractor to continually justify his steps to the owner, because owner representatives agreed to each phase of the project, large or small, before the work was done.

3. Those matters which the company felt important throughout the project received maximum attention. Costly alternate design and construction studies which any good contractor prepares in an attempt to please a customer, were eliminated.

4. Maximum utilization of the resources, e.g., manpower, previous thought and knowledge, et cetera, of both the contractor and the customer, through clearly defined customer requirements, procedures and areas of application, was obtained.

5. Through the technique of the owner and contractors assigning resident and full time men at each level in the organization, work was never held up pending decision from absentee managers. Often because of these prompt decisions, concerning particularly the use of selective overtime and design alternates, substantial savings were made, which under any other conditions would not have been possible.

Consolidated Demonstrates Its Recovery of Spent Sulphite Liquors

The first commercial scale installation of the Bradley process opens new horizons in sulphite and semichemical pulping by alleviating stream and air pollution.

Pulping research has demonstrated that the sodium base sulphite process may be modified to produce selected strong, light colored, easy-bleaching pulps from a wide variety of woods. The commercialization of these developments has been retarded by one all important fact—economics. In the absence of a reliable process for the recovery of the pulping chemicals, the diversification and growth of the sulphite industry has been limited by the quantity of pulping chemicals which could be discarded economically.

The kraft process employs an efficient chemical recovery system and has such a low pulping cost that, in spite of a costly and complicated bleaching system, high strength bleached pulps can be produced at costs which have put the bleached sulphite manufacturer in an unfavorable competitive position.

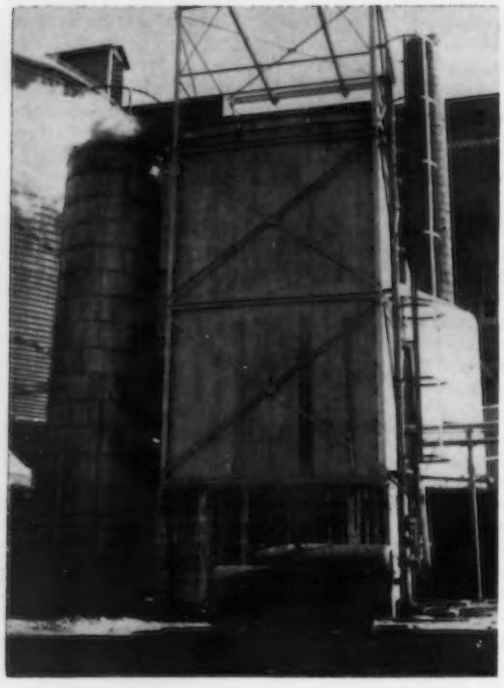
Sulphite Recovery System

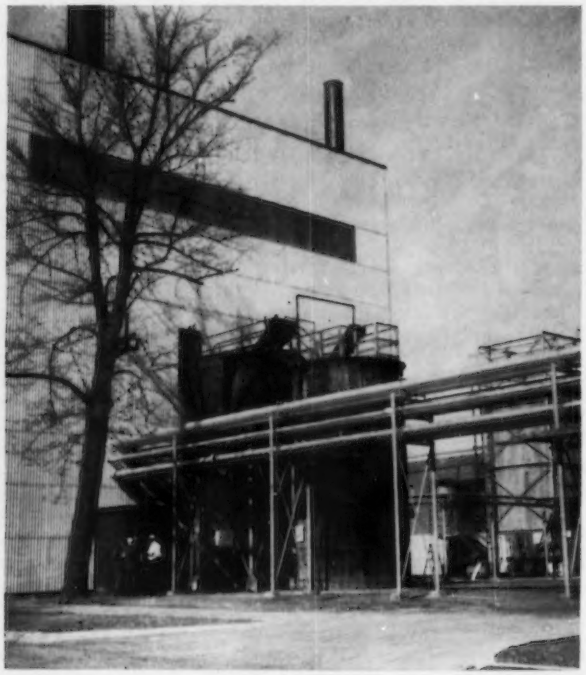
Western Precipitation Corp.'s development of an efficient chemical recovery system for sulphite mills now makes it possible to tailor the amount and composition of the sulphite cooking chemical to the type of pulp desired and the available wood species and to compete with kraft on cost and quality. With chemical recovery the cost of cooking chemicals is not a process limitation.

The process also obviates the defects of previously proposed recovery systems which have received scant acceptance due to high equipment cost, operational hazards, air pollution or impure cooking acid. The shrinking wood supplies for the conventional acid sulphite process, the need of a market for fast growing locally produced woods, the competition of bleached kraft, and the rise in the neutral sulphite semichemical production have created a critical need for this process. Further, Western's process provides a means of improvement in stream pollution through re-use of chemicals, previously dumped into rivers.

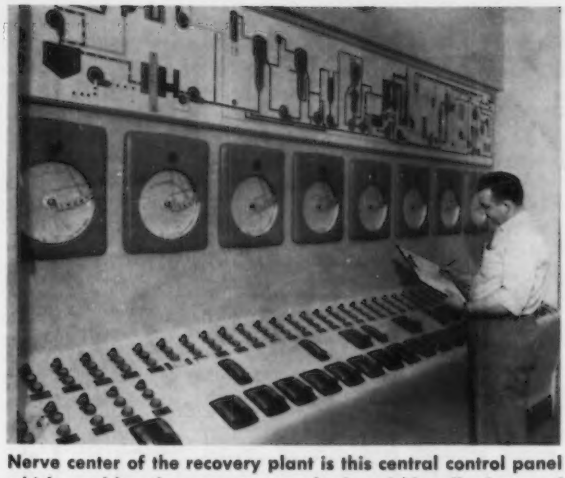
This new chemical recovery system is now in commercial scale operation, on an experimental basis, at Consolidated Water Power & Paper Co.'s mill at Wisconsin Rapids, Wis.

Oxidizing tower where minute bubbles of air are blown through the mixed spent liquors to result in a foam. Tower at left then collapses foam, prior to pumping of the oxidized liquor to evaporators.

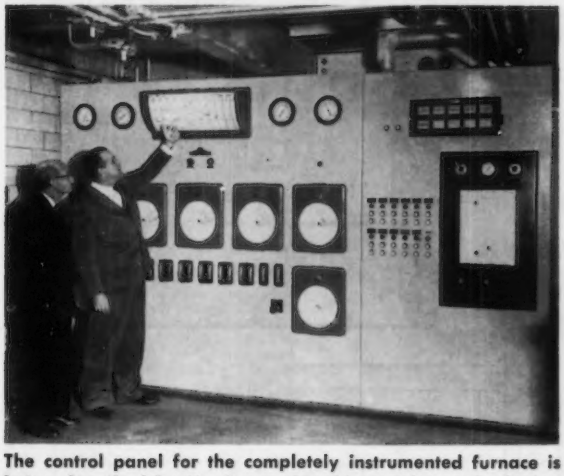




Recovery plant encloses all of the equipment except the yellow liquor (sodium sulphide) storage tank, the thickener (left tank), and the oxidizer (rear). Full scale plant will occupy area to right and rear of present building.



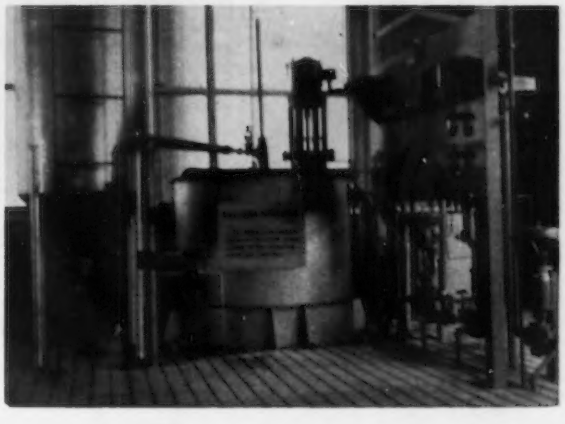
Nerve center of the recovery plant is this central control panel which enables the operator to check quickly all phases of plant operation. Recovery of soda, sulphur, and heat from spent liquors is automatic.



The control panel for the completely instrumented furnace is being described by Mr. Boyer. Graphic panel at right depicts the shot cleaning system: 1,000 lbs. steel balls, circulated by 110 lbs. air at regulated intervals, have maintained air heaters clear of corrosion for more than a year.

Na_2CO_3 crystallizes out from the green liquor in this salting-type evaporator. The crystals then are separated from the mother liquor, washed to 98.5 percent purity, and redissolved in water.

Sodium carbonate, sodium sulphite, and water are automatically proportioned in the center tank to make-up the white cooking liquor for the NSSC mill.



Since the process may be used for any combination of spent liquors from pulping processes, a plant which has more than one sulphite process or a sulphite and a kraft process requires only one recovery system.

Basic Process

The basic process operates by converting the spent liquor from sulphite pulping to a solution resembling the black liquor of the kraft process. The conversion or "fixing" is accomplished by adding sodium sulphide to the spent liquor in an oxidizer where it reacts with the ligno-sulphonates to form non-corrosive thiosulphates.

After conversion, the modified liquor is run through standard kraft type evaporators to concentrate the solids to the same density as with kraft. The concentrated solution mixed with sodium sulphate (recovered from the furnace gases) is further evaporated and then burned in a recovery furnace. Heat from the combustion is used to generate steam for power and processing while the inorganic solids and sulphur dioxide gas are recovered. Sodium sulphide and some sodium carbonate from the furnace smelt are recycled to treat more spent liquor.

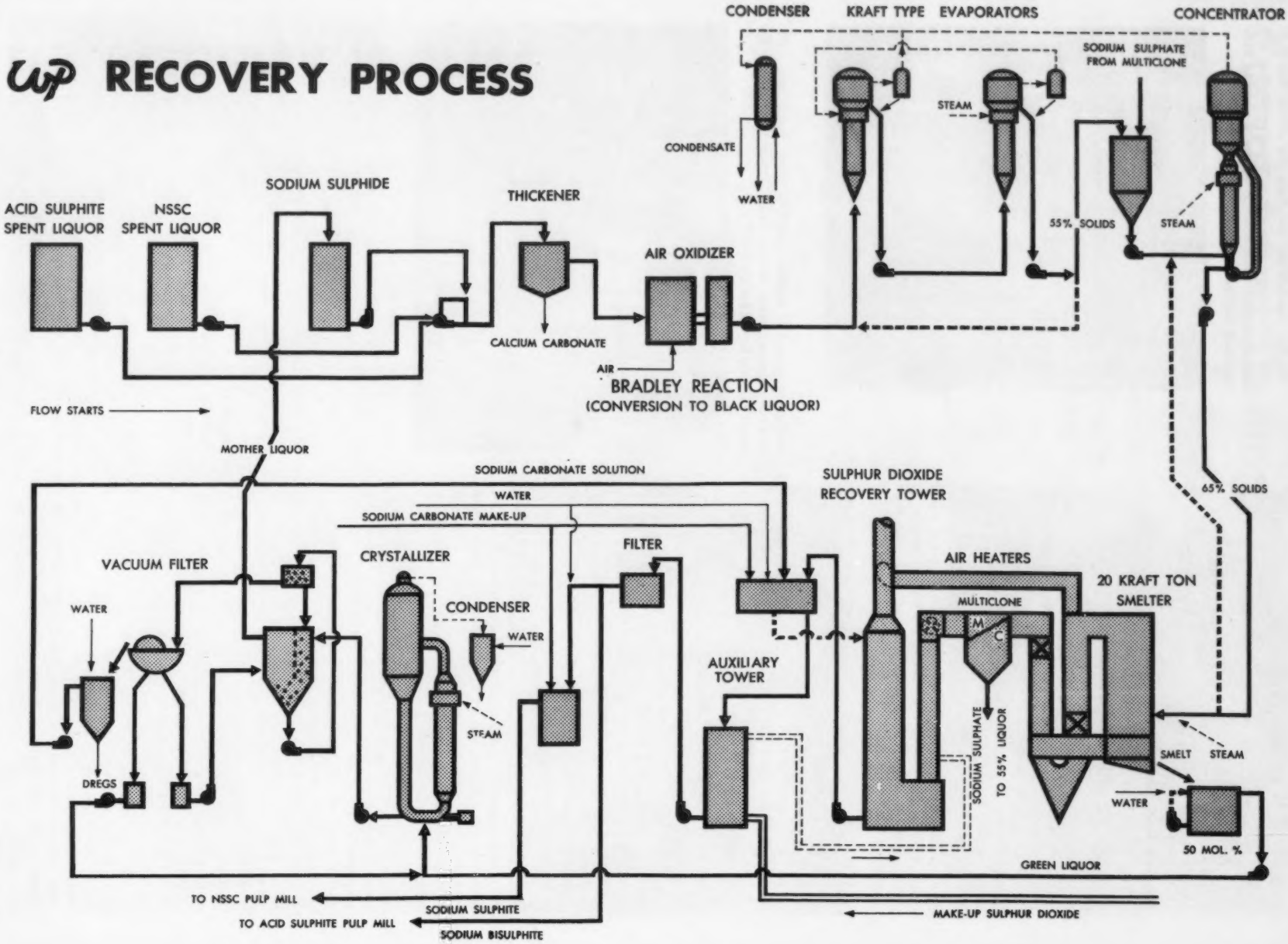
Sulphur dioxide from the flue gases and recovered sodium carbonate are used to produce new digester cooking liquor. Sodium sulphate is recovered from the flue gases and sent to the concentrated liquor.

Because the process renders the spent liquor non-corrosive, standard kraft type equipment of mild steel or iron may be utilized in recovery, lowering capital investment. Sulphite spent liquors presented a major corrosion problem before the development of this process.

There is a real vapor pressure of sulphur dioxide over boiling alkaline spent sulphite liquor. Also sulphite ion is carried into the condensates by entrainment. This provides a corrosive mixture. This effect can be suppressed by the presence of sulphide ion. Large amounts of hydrogen sulphide, however, produce scaling, corrosion, and an industrial hazard.

Where an alkaline mixture of sodium sulphide and spent liquor is not

WP RECOVERY PROCESS



reacted with oxygen, 60 per cent of the added sulphide is volatilized as hydrogen sulphide during evaporation. This prohibited the use of the sodium sulphide recycle method before the present development.

Bradley Reaction

The technique used in the new system is to react the sulphide sulphur from the smelt with the sulphite sulphur in the spent liquor and oxygen. This unit operation is referred to as the Bradley process after the late Linn Bradley, who pioneered for over thirty years in pulp and paper processes. Mr. Bradley and Robert Q. Boyer, head of WP's Chemical Process Dept. discovered that sulphur in the zero valence state, which exists as either colloidal sulphur or a polysulphide, will react rapidly with available tetravalent sulphur in the ligno-sulphonates to form thiosulphates and polythionates which are not corrosive.

The sulphur available from the smelt is in the form of non-reactive sulphide ion and must be raised to the zero state by an oxidation-reduction technique. This is done in the Bradley process step by blowing the reaction mixture with air at atmospheric pressure.

Some kraft mills react their liquors, which contain no sulphite, with air to convert the spent liquor sodium sulphide into sodium thiosulphate. In the Bradley-Boyer reaction the mixed sulphide ion and the sulphite ion form thiosulphate in the presence of an oxidizing agent. Oxygen is preferred, but another modification uses part of the sulphite ion as the oxidizing agent.

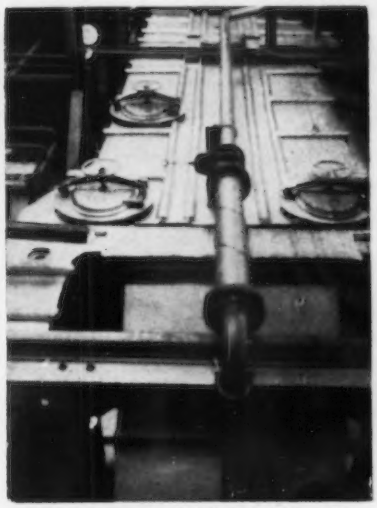
The virtue of Western's recovery system is the mutual elimination of the added sulphide and the spent liquor sulphite ion, both of which would contribute to corrosion in the evaporators and loss of sulphur. In contrast, the kraft air blowing (known under various names, such as Townsend Process, Bergstrom-Trobeck Process, etc.) is used to reduce sulphide scaling and corrosion as well as sulphur loss.

When the air oxidation is performed properly all of the corrosive sulphite ion is removed and the formation of volatile, scale forming hydrogen sulphide is suppressed.

Combustion

After the treated liquor has been concentrated by evaporation, it goes into the recovery furnace. It is at the furnace and its related boiler that major economies are effected through the production of high pressure steam. In the few mills which do not generate power, a low pressure boiler may be substituted to operate back pressure evaporators, exhausting into indirect heaters of the digesters, which will sustain the evaporation and the pulp mill's heat demand.

The operation of the process has proved that in burning process thick liquors with different ratios of sodium to sulphur, the resulting sulphidity of the furnace smelt remains at 50 per cent. This molar equality between sodium sulphide and sodium carbonate is established during the first stage of the two-stage charring-



Looking upwards at the backside of the recovery furnace which will produce 75,000 pounds steam per day. Air heaters permit burning of NSSC liquor alone without auxiliary oil at combustion air temperatures of 500°-600°F.

smelting effect during burning in the furnace.

Normal operation produces molar equality. Any deviation may be corrected by introducing additional sodium sulphate to the thick liquor to increase sulphidity or sodium sulphide to decrease it. The sodium sulphate is reduced to sodium sulphide in the smelt. Any sodium sulphide in the thick liquor is converted to sodium carbonate in the charring stage. Excessive sodium carbonate in the liquor goes into the smelt unchanged. Sodium hydroxylignins, such as added from kraft liquor, produce carbonate.

As the liquor is charred, before it reaches the smelting zone in the furnace, the excess sulphur compounds are broken down and burned to sulphur dioxide. The char is composed of sodium sulphate, sodium carbonate, and carbon. In the smelting zone the carbon reduces the sulphate to sulphide and any residual carbon is burned off. The equimolar mixture of carbonate and sulphide melts and flows from the furnace as a smelt.

The smelt is dissolved in water to provide a green liquor feed to a crystallizing evaporator where part of the sodium carbonate is removed to be used in making fresh cooking liquor. The residual mother liquor containing sulphide and carbonate is recycled to treat spent liquor in the first stage of the process.

Economics of Recovery

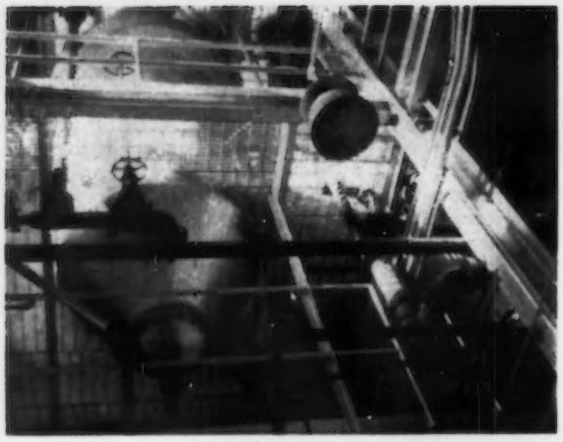
In soda, or other soluble base, semichemical and acid sulphite mills, the combined chemical and heat savings are substantial and justify the recovery system investment for even relatively small installations (100 tons pulp per day).

Cost wise, when compared to calcium base acid sulphite, soda base pulping plus the recovery is advantageous only in the larger mills, as the inevitable washing losses of sodium base spent liquor cancel out the greater part of the chemical savings made in the recovery system. The recovery furnace and the boiler not only serve as a chemical process unit, but serve as a high pressure steam generator to supply the pulping requirements and a substantial amount of electrical energy. The value of steam produced is sufficient to make the changeover economical in large installations — 150 to 200 tons. In addition, there are the unevaluated benefits of the greater flexibility of soda base pulping which permits the use of a wider variety of woods and the contribution to stream improvement.

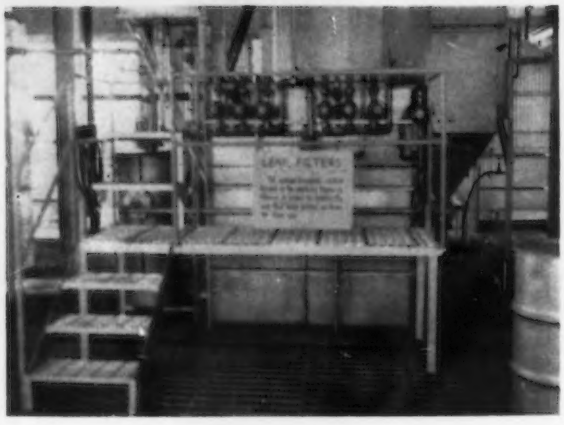
Advantageous sulphite pulping processes requiring prohibitive amounts of pulping chemical awaited an economical recovery system. With these processes, the economic advantage cannot be measured in terms of chemical recovery only, but rather by the total cost of bleached pulp production with recovery as compared with producing an equivalent bleached pulp by some other process.

Advantages of the process are:

1. An inexpensive evaporator system.
2. Efficient chemical and heat recovery.
3. The direct production of sulphite cooking liquor.
4. Thiosulphate-free cooking acid.
5. No toxic and explosive hydrogen sulphide.
6. A compatible liquor for kraft integration.
7. All standard unit operations.



The LTV evaporators as they appear from below. Oxidized black liquor is concentrated from 16% to 55% solids. Vapor from the first effect serves to heat the second effect.



The sodium sulphite-bisulphite solution, fortified with SO_2, is filtered to remove fly ash picked up from the flue gases. The media are vacuum leaf filters covered with nylon that has been precoated with diatomaceous earth.

8. The pulp industry is familiar with the equipment.

9. It is a self-balancing system throughout.

A Stage by Stage Outline

The experimental recovery plant was built to process the spent liquors from 20 tons of acid sulphite or 50 tons of NSSC, or on a ratio of these mixed liquors collected from a 130-ton sulphite mill and a 100-ton NSSC mill.

THICKENER

Collected spent sodium-base sulphite and NSSC pulping liquors are mixed with sodium sulphide and sodium carbonate (which have been recovered from the downstream smelt). It is then fed into a thickener. The pH of the liquor in the thickener is held at 11.8 by controlling the ratio of sodium carbonate to sodium sulphide.

Calcium present in the spent liquor after the pulping process has bleached it from the wood chips reacts with the sodium carbonate to form calcium carbonate. This insoluble material, and any fine pulp fibers still present in the liquor, are removed and the calcium-free, alkaline liquid is then fed to an oxidizer.

AIR OXIDIZER

The alkaline liquor is blown into a foam by compressed air in a diffuser type oxidizer. This accelerates the reaction of the recycled sulphide with the lignin-sulphonates from the pulp. Thiosulphates and polythionates are formed as the oxidation-reduction reaction brings the sulphur to the zero valence state. All sulphite ion not in combination with liquor is also reacted to the non-corrosive thiosulphate ion.

The liquor at this point is free of sulphite ion and has a pH of 10.7. This alkalinity is high enough to prevent precipitation of the desulphonated lignin present (at 90° C, a pH of 10.7 permits solubility up to 66 per cent solids). The liquor leaving the oxidizer has characteristics very similar to an air-oxidized kraft black liquor and contains similar chemical compounds.

KRAFT TYPE EVAPORATORS

Standard kraft multiple effect evaporators concentrate the black liquor to 55 per cent solids. Condensates from the evaporators are non-toxic and have little odor.

By preventing the formation of hydrogen sulphide at the evaporators, two major benefits are realized:

a. Sulphur values are saved and

b. Scaling and corrosion caused by hydrogen sulfide are prevented.

THICK LIQUOR STORAGE

The thick liquor formed in the first stage of evaporation is stored at elevated temperatures for the finish concentration stage. As long as solids concentration does not exceed 55 per cent, the tendency of lignin products to precipitate during prolonged storage is prevented.

CONCENTRATOR

The thick liquor is concentrated further to 65 per cent solids in a forced circulation finish evaporator. Standard kraft process direct contact evaporators cannot be used due to the highly acid sulphur dioxide laden gases from the recovery boiler. In contact with the converted sulphite liquor, the sulphur dioxide would precipitate out the hydroxy-lignin created during fixing. On the other hand, kraft liquor may be successfully treated in forced circulation type evaporators so the process remains compatible.

RECOVERY FURNACE AND BOILER

The thick liquor is sprayed into a 20 ton kraft-type recovery furnace (smelter unit only) which is equipped with an economizer and an air heater so the flue gases, with about 1 per cent of sulphur dioxide, leave the unit at a temperature of about 300° F. which is suitable for the subsequent Cottrell electrostatic precipitator.

The molten smelt contains the sodium sulphide equivalent to that which had been added to the spent liquor at the start of the cycle. It also contains sodium carbonate equal to that added plus the sodium as carbonate equal to the sodium in the spent liquor after the pulp digesting process. Sulphur equivalent to that in the spent liquor is driven off as sulphur dioxide in the flue gases.

DISSOLVER TANK

Molten smelt from the furnace is dissolved in water to form a nearly saturated green liquor suitable for feed to the evaporator-crystallizer.

CRYSTALLIZER AND SALT FILTER

The green liquor from the smelt dissolver is passed through a salting

(Continued on page 58)

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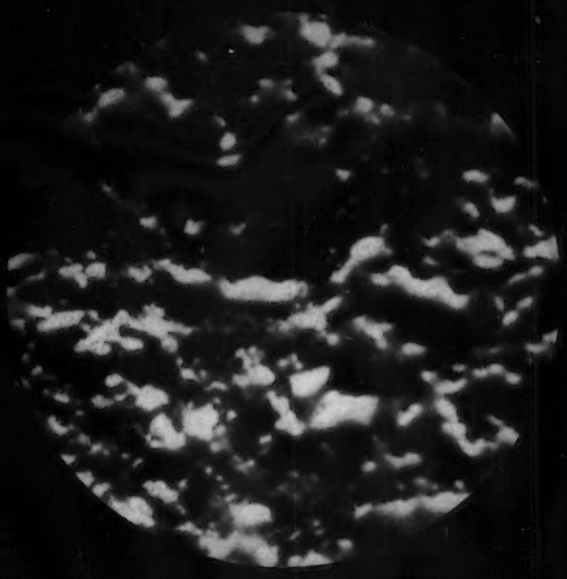
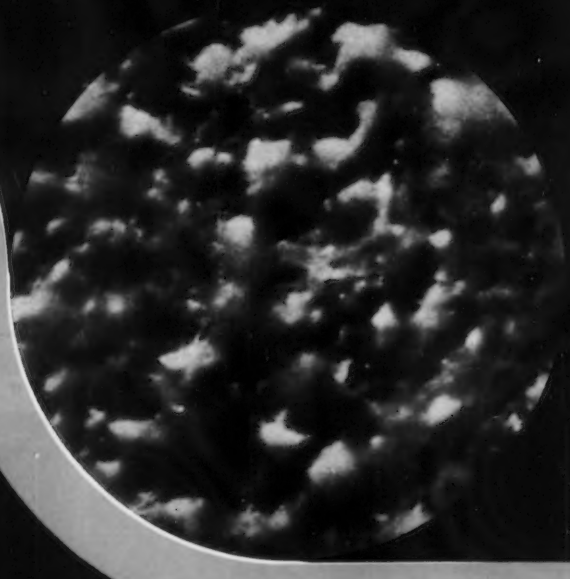
COATING A Made with ordinary latex. Note irregular pattern, poor surface, paper fiber visible in coating voids.



COATING B Made with ordinary latex. High, uneven pattern means poor receptivity to ink, erratic coverage.

COATING C Made with DAREX LATEX C, this coating has smooth, uniform, low-pattern surface.



Photomicrographs show amazing difference

Enlarged 80 times, these calendered coatings are identical in formulation except for the latex. Note that only Coating C, made with DAREX LATEX C, produced a smooth, uniform, low-pattern surface. New latex controls the rheology of the color and the quality of the coating!

Consolidated's Sulphite Recovery

(Continued from page 54)

type evaporator where sodium carbonate crystals are formed. The extent of evaporation determines the amount of the sodium carbonate left in the solution. For semichemical liquor, 10 per cent of the carbonate is left. For acid sulphite liquor, 50 per cent of the carbonate is left. Mother liquor (sodium sulphide and carbonate mixture) is sent to the thickener in stage 1 for recycling with the spent liquor from pulping.

The sodium carbonate crystals are settled and fed to a separation filter.

SEPARATION FILTER

A filter separates the carbonate crystals from the stream, washes them and returns the mother liquor to the salt settler and the washings to the crystallizer. The sodium carbonate (about 98.5 per cent purity) is fed into a repulper for redissolving.

REPULPER AND DREG SETTLER

The filtered and washed crystals of sodium carbonate are dissolved in water. The dregs may be settled or filtered out. The high purity soda ash solution is pumped to a scrubbing tower.

SODIUM SULPHATE RECOVERY

The flue gases, containing about 1 per cent of sulphur dioxide, are passed through an electrostatic Cottrell precipitator. Sodium sulphate and the carbon present are removed and the clean flue gases are fed to a sulphur dioxide scrubbing tower. The sodium sulphate and carbon are sent to the thick liquor.

The present experimental plant is too small to justify the installation of a precipitator, instead a 16-tube Multiclone collects part of the sodium sulphate. The portion which is lost as fume is made up by adding an equivalent amount of sodium sulphate to the thick liquor. Some of the carbon, which would all have been eliminated in the precipitator, is caught in the scrubbing tower. This is removed from the finished liquor by filtration.

LIST OF EQUIPMENT SUPPLIERS

The Babcock & Wilcox Co.	Furnace
Bailey Meter Co.	Instrumentation
Clarage Fan Co.	Induced draft fan
Crane Engineering Sales, Inc.	Pumps — Gould, Jabsco, Labour, Milton, Roy, and Viking
Dorr-Oliver, Inc.	Dorrclone
Felker Brothers Manufacturing Co.	Stacks and tanks
General Electric Co.	Motors, starters, electrical equipment
General Blower Co.	Gas booster fan
Ingersoll-Rand Co.	Air compressor
Infilco, Inc.	Clarifier and sand filter
Mixing Equipment Co.	Mixers
Roots-Connersville Blower Division of Dresser Industries, Inc.	Blower
Swenson Evaporator Co.	Evaporators, crystallizer, condensor
Wallace & Tiernan, Inc.	Feeder
Western Precipitation Corp.	Air oxidizer, scrubbing tower, and multiclone
Wisconsin Bridge & Iron Co.	Steel framework and aluminum siding
Worthington Corp.	Pumps
L. J. Wing Manufacturing Company, Division of Aero Supply Mfg. Co., Inc.	Waste heat air fan

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SCRUBBING TOWER

The sulphur dioxide ladened flue gases from the Cottrell precipitator are absorbed in a sodium sulphite-bisulphite liquor. The composition of the absorbing solution entering the tower is controlled by the addition of the purified sodium carbonate solution. Part of the sulphur dioxide enriched solution from the bottom of the tower is recirculated to be fortified with the purified soda ash solution. The other portion of the liquor passes through a heat exchanger for cooling, is diluted with water and fed to a raw acid absorption tower. In the case of semichemical liquor, only part of the sodium carbonate is used in the tower. The rest is used to blend with the enriched sulphite-bisulphite solution to produce the proper ratio of sodium sulphite and bicarbonate for semichemical cooking liquor.

RAW ACID TOWER

For the acid sulphite process, the sodium sulphite-bisulphite liquor is further reacted with make-up sulphur dioxide to create full strength cooking liquor. The make-up gas is produced by a standard sulphur burner. From the acid tower the cooking liquor is fed into an accumulator. The major part of the sulphur dioxide added in the raw acid tower is to replace that lost when the digesters are blown.

CHEMICAL MAKE-UP

In normal operation make-up sulphur is introduced to the system as sulphur dioxide at the raw acid tower: soda make-up in the form of soda ash goes to the scrubbing tower.

Confident of Recovery

Stanton W. Mead, company president, stated that Consolidated considers the new plant as experimental and is confident but not yet certain of its performance.

"We are, of course, sure the new plant will produce heat, soda, and sulphur for re-use in our pulping operations," declared Mr. Mead. "We cannot be certain of operating efficiency and actual cost until the plant has operated quite a while. Sustained operations will provide our company with the information we need for deciding wisely about its expansion. If it turns out as we expect it would undoubtedly provide the answer to pollution abatement at this mill. It is of equally great importance in the interests of conservation that the processes which are adopted by the industry to improve Wisconsin's streams shall prove not only effective but also economically supportable."

More than three-quarter million dollars have been invested in this recovery plant. The company expects to expand the experimental plant's capacity to process all recoverable spent sulphite and semichemical liquor from the entire mill.

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NEW LITERATURE

Allis-Chalmers
G-149 and G-226

Provides design data, engineering and performance capabilities of these units with numerous illustrations, including a center spread devoted to a cross section of each unit with descriptive marginal notes. Also lists optional equipment. Catalog BU-528 and BU-531. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Chemical Testing
Services

Describes their complete line of chemical laboratory testing and research facilities. Bulletin 5901. United States Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.

Ewell-Parker
Fork Trucks

Contains engineering data, specifications, and operating information on more than 25 basic fork truck models. Also covers the major attachments used with various models. Condensed Catalog. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

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Glenfield
Microstraining

Includes photographs of actual installations and a sheet with flow chart and cleansing arrangements for a simple and economic water clarification system. Brochure. Glenfield & Kennedy, Inc., 706 North Ave., New Rochell, N. Y.

Muscles of
Control

Shows how control valves function and how they are engineered. 16mm colored film with running time of 25 minutes. Bookings are being scheduled. Available to manufacturers in the process industries and others. Fisher Governor Co., Marshalltown, Iowa.

Pennsylvania
3-AT Compressors

Illustrates and describes these compressors which are horizontal, water-cooled, single-stage, and heavy duty, designed for nine out of 10 compressed air applications. Bulletin 350. Pennsylvania Pump & Compressor Co., Easton, Pa.

Ross-Miami
Steam Traps

Discusses typical applications, capacities and construction. Also includes tables, orifice sizes, parts and seat pressures. Bulletin T-300. Ross Midwest Fulton, 918 Woodley Rd., Dayton 1, Ohio.

Sight Flow
Indicators

Provides information on sizes, materials, pressure-temperature ratings and dimensional specifications on their line of reflex and transparent sight flow indicators which can easily be installed on new or existing lines. Data Unit 350. Jerguson Gage & Valve Co., 80 Adams St., Burlington, Mass.

O&S Model 5
Powermaster

Contains data on sizes from 20 through 100 h.p. oil-fired and gas-fired Powermaster packaged automatic boilers. Bulletin 1250, Orr & Sembower, Inc., Morgantown Rd., Reading, Pa.

Yarway Liquid
Level Indicator

Tells how this miniature secondary liquid level indicator works, where it is used and construction details. Also provides an installation diagram. Yarnall-Waring Co., Chestnut Hill, Philadelphia 18, Pa.

A Report to
Management

Explains comprehensively the role of centralized lubrication—its advantages over manual methods; three areas where

it can effect savings; five practical steps for converting to automatic lubrication; case histories and detailed application data on basic centralized systems. Brochure. Lincoln Engineering Co., Industrial Div., 4010 Goodfellow Blvd., St. Louis 20, Mo.

Vertical Battery Chargers

Points up major design features with photos and line drawings supplementing the text. Also includes dimensions, ratings, sizes and other specification information in chart form. Form 6259. Exide Industrial Div., Electric Storage Battery Co., Rising Sun and Adams Aves., Philadelphia 20, Pa.

Cash-Acme Wall Chart

Features ready reference data on the company's varied line. Four new valve series are illustrated for the first time. Wall Chart 59. Cash-Acme, P.O. Box 191, Decatur, Ill.

Dodge Screw Conveyor Drives

Describes a compact screw conveyor drive complete with speed reducer, packing gland and drive shaft, all of which mount as a unit on a trough end. Also includes photographs, engineering drawings and tables. Bulletin A667C. Dodge Mfg. Corp., Mishawaka, Ind.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2
1959	90.5r	95.2r	95.8r	95.8r	91.6
	Apr. 5	Apr. 12	Apr. 19	Apr. 26	May 3
1958	89.8	87.8	87.2	88.1	89.5

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	87.8‡	89.2‡	93.1‡	—	—	—	—	—	—	—	—	—	—
1958	86.9	89.5	89.5	88.4	87.2	87.2	75.3	89.6	86.5	91.6	90.4	93.1	87.1

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1952	1953	1954	1955	1956	1957	1958	1959
Year to Date	95.3	94.4	93.8	95.5	101.4	95.3	87.8	91.2
Year Average	88.6	92.3	91.6	94.0	97.9	90.9	87.1	—

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Apr. 4	Apr. 11	Apr. 18	Apr. 25	May 2
1959	89	94	95	93	94
	Apr. 5	Apr. 12	Apr. 19	Apr. 26	May 3
1958	88	82	87	81	81

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1959	86	93	95	—	—	—	—	—	—	—	—	—	—
1958	80	86	88	84	84	86	76	93	90	95	92	81	86

† *Percents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING May 2, 1959	LAST WEEK ENDING Apr. 25, 1959	CUMULATIVE TO DATE Jan. 1 to May 2, inc., 1959
% Activity	94%	93%	92%
TOTAL	320,662	304,464	5,211,474
Liner	113,209	100,305	1,775,402
Corrugating Material	47,259	48,975	786,837
Chip & Filler Board	4,876	4,871	85,956
Total Containerboard	165,344	154,151	2,648,195
Folding	58,204	57,345	974,845
Set-Up	12,061	11,284	201,462
Special Food Board	32,294	30,723	486,958
Other	52,759	50,956	900,014
Total Boxboard	155,318	150,313	2,563,279
Total Orders Received	374,448	311,340	
Unfilled End of Week	507,369	455,533	

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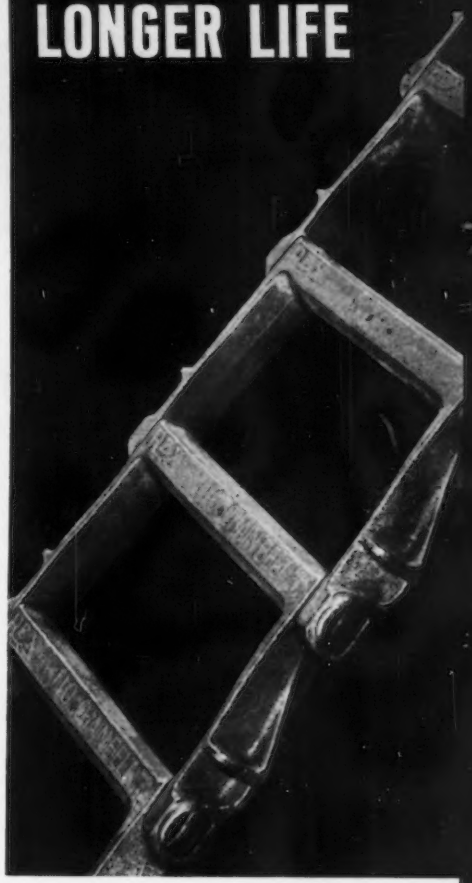

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PJT NEWS OF SUPPLIERS

I. R. Bielek

H. H. Walther

Dowell Division of The Dow Chemical Co. has recently established facilities on the West Coast to provide chemical cleaning services for the pulp and paper, and chemical fields.

Sales operations are headed by Herbert H. Walther, general office sales engineer. Mr. Walther has his office in the Statler Center Building at 900 Wilshire Blvd. in Los Angeles. The sales and service area includes California, Oregon, Washington, Idaho, Nevada and Arizona.

Dowell has service and operating facilities in Ventura, Cal. These activities are managed by Ivan R. Bielek. Leonard E. Weatherbee, who has been with Dowell since 1952, has been transferred from Chicago to Ventura as service engineer. Equipment operators are R. J. Pickerel and G. W. Nairn.

Mr. Bielek, manager of the Ventura station, has been with Dowell since 1947. He has served in all capacities of Dowell's chemical cleaning services. He had been a treating engineer, sales engineer, and field development engineer throughout the mid-east. From 1957 until his move to California, he was district operations manager in Cleveland, Ohio.

Mr. Bielek has a Petroleum Engineering Degree from the University of Pittsburgh, and served four years with the Army Corps of Engineers during World War II.

Manchester Machine Co., Middletown, manufacturer of papermaking machinery, has appointed five project engineers and announced two other changes.

Named as project engineers were Ray Evans, Alton Trufitt, Gene Roberts, Dimitrijs Rubenis and Geoffrey Jowett.

In addition, Gene Faulkner was named industrial engineer, and Elmer Hadler was appointed supervisor of accounting.

Castle & Overton, Inc., of 630 Fifth Avenue, New York City, announces the election of Patrick N. Barrett as secretary. Mr. Barrett has been with the company for more than 20 years and is well known in paper, pulp and wastepaper circles.

United States Rubber Co. has named Howard K. Norris production manager of the mechanical goods division, effective immediately. Mr. Norris succeeds W. A. Armstrong, production manager of the division since 1949, who retired at the age of 60. Operating out of the rubber company's Rockefeller Center, New York City, headquarters, Mr. Norris will supervise plant production and product development at the Philadelphia, Passaic, N. J., and Sandy Hook, Conn., plants of U. S. Rubber.

Hooker Chemical Corp., with headquarters at Niagara Falls, N. Y., has formed a Bahamian corporation, Hooker Chemical International, Ltd., for the purpose of engaging in chemical manufacturing and marketing activities in Latin American countries, Thomas E. Moffitt, president, has announced.

Mr. Moffitt also announced the formation of a Mexican company, Hooker Mexicana, S. A., organized primarily to manufacture and market phosphates in Mexico.

D. W. Curtis

E. D. Jones Corp., Pittsfield, Mass. Donald W. Curtis has been transferred from Beloit Iron Works, Beloit, Wis., to the Jones Corp. as assistant to the president. In his new position he is taking active part with other members of the Jones executive staff in plans to expand the company's facilities and service to the papermaking industry.

Mr. Curtis is a graduate of Johns Hopkins University and attended the Institute of Paper Chemistry. He is a member of the Technical Association of the Pulp and Paper Industry and has published several papers on papermaking machinery and papermaking. Mr. Curtis has been with Beloit Iron Works, Jones' parent organization, for more than ten years.

Wyandotte Chemicals announces the expansion of its staff for the purpose of broadening its pulp and paper applications research program.

The company has added Ian C.

MacGugan and Ed T. Parker to its pulp and paper laboratories in the applications research department of the Research Division.

Mr. MacGugan will join the company as a research section head in the pulp and paper laboratories. Mr. Parker joins Wyandotte as a staff member in the pulp and paper laboratories.

G. Nager

Stadler Hurter International, Ltd., Consulting Engineers, 1501 St. Catherine St. W., Montreal, has formed a subsidiary, Stadler Hurter Zurich A.G., with offices at 45 Seefeldstrasses, Zurich 8, Switzerland, in order to give more adequate engineering services to their European clients.

G. Nager, assistant project engineer, has been transferred to Zurich from the Montreal office as head of the engineering department of the new subsidiary.

A. M. Hurter, p.eng., M.E.I.C., of Montreal is president of the Swiss Co., with R. Wettstein of Zurich as vice president.

General Electric Co. is combining its Communication Products Department here, which makes two-way radio systems for lumber and paper firms, as well as other types of mobile radio users, with the Technical Products Department of Syracuse, N. Y., which engineers advanced communication equipment for the military services.

Harrison Van Aken, general manager of General Electric Communication Products Department, will head the combined organization with headquarters in Lynchburg.

Two-way radio communications for the lumber and paper industry will be made in Lynchburg. Previously, this equipment was manufactured at Utica, N. Y.

Neptune Meter Co., New York, N. Y., has announced the promotion of Charles W. Krause from Eastern regional sales manager to general sales manager for all the company's liquid meters, including Neptune water, industrial, and petroleum meters.

James C. Judge, district manager of the Portland, Ore., branch office succeeds Mr. Krause. Neptune's Philadelphia and Boston branch offices are included in the Eastern region.

Other sales department changes include the naming of G. W. Moore as Philadelphia district sales manager for all Neptune meters. John J. Moran, who has represented Neptune in New York City and adjoining areas, succeeds Mr. Moore as sales representative for water and gas meters in upstate New York.

Neptune also announced that the company's "Capital District," handled by M. J. Siebert (now retired), has been incorporated into Philadelphia District sales territory, now covered by H. J. Siebert and Russell Rutan.

J. O. Ross Engineering Division Midland-Ross Corp. Effective May 11, 1959, the new headquarters address of the J. O. Ross Engineering Division of the Midland-Ross Corp. will be 730 Third Ave., New York 17, N. Y.

J. E. Cirner

Mathews Conveyor Co., Ellwood City, Pa. John E. Cirner has recently joined the Detroit Office as a sales engineer. After receiving his BMS degree at the University of Detroit in 1951, Mr. Cirner was associated with Mechanical Handling Systems Co. and most recently with the estimating department of the Jervis B. Webb Co. in Detroit.

Koppers Co., Inc. Harry B. Cummings, vice president of Koppers and general manager of its Metal Products division, Baltimore, Md. announces that the division's F. X Hooper box machinery department Glenarm, Md., and George W. Swift, Inc., Bordentown, N. J., have been combined to form the container machinery department of the division. The announcement followed disclosure last week of the purchase by Koppers of all assets of Swift, producer of machinery for the corrugated container industry.

Mr. Cummings also announced the promotion of Charles D. Nitchie, formerly chief engineer at Hooper, to

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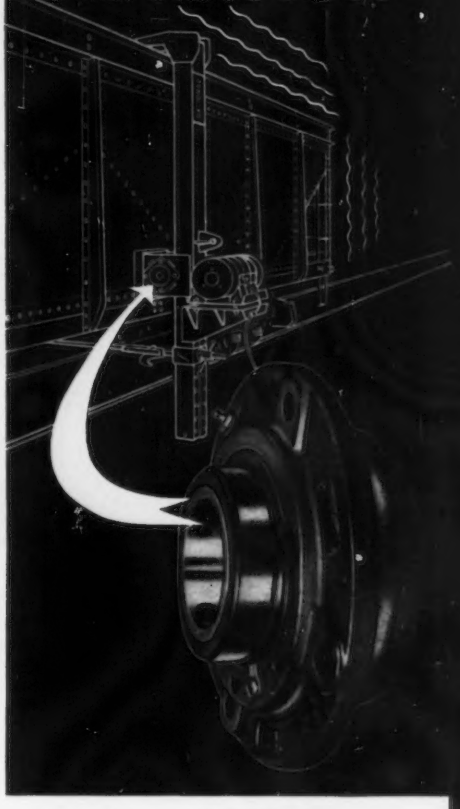

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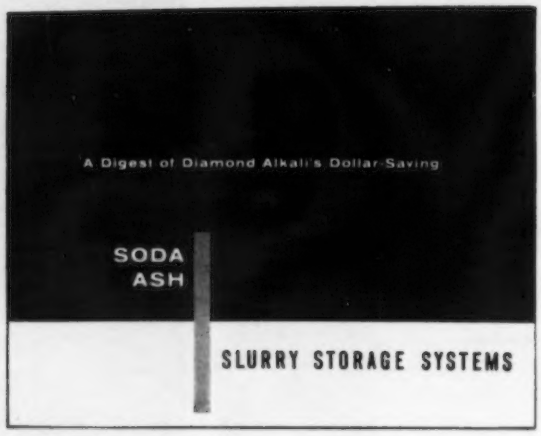

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the position of general manager of the department which will operate as a product line organization. Mr. Nitchie will have complete responsibility for marketing, finance, production and engineering for the department. He will be responsible to Mr. Cummings for the profitable management of the container machinery business and for the operation of the department.

Allis-Chalmers has announced the appointment of Homer P. Binder as consultant, and of Hugh L. Ross as manager, of the West Allis pump department of the General Products Div.

Mr. Binder, an electrical engineering graduate of Purdue University, who joined Allis-Chalmers in 1911, has been manager of the department since 1942.

Mr. Ross, a mechanical engineering graduate of Yale, joined the company in 1928 and has been assistant manager of the centrifugal pump department since 1955.

A. E. Staley Manufacturing Co., Decatur corn and soybean processor has appointed Leo A. Willoughby to a newly created position of coating supervisor in its field sales organization serving the paper industry.

Robert L. Schuerman, manager of the company's paper industry sales, said Mr. Willoughby will continue as sales representative in Upper Michigan, Wisconsin and Minnesota, but will aid other Staley representatives, customers and the company's paper applications research laboratory in technical consulting work as coating supervisor.

W. H. F. Jordan, Jr., Manufacturing Co., Inc., Philadelphia, Pa., has appointed Sam H. Popovich director of technical service and development for the Paper Chemicals Division.

Specializing in pulp and paper technology, Mr. Popovich was graduated from New York State College of Forestry at Syracuse University in 1950 with a B.S. degree in chemistry. For the past nine years he has successively served as quality control supervisor, technical director and director of research and development for the Hamilton Paper Co. in Miquon, Pa.

Castle & Overton, Inc., of 630 Fifth Avenue, New York City, announces the election of Patrick N. Barrett as secretary. Mr. Barret has been with the company for more than 20 years and is well known in paper, pulp and wastepaper circles.

Prices of Fibers

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$ 82.50/ 90.00	§390.00/ —	§380.00/ —	§390.00/ —
Bleached Gw'd	$ 97.50/100.00	$ 97.50/100.00			
Kraft, Blchd.	157.00/ —	160.00/162.50	§157.00/162.50*		§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		§137.00/ —		
Kraft, Semi-bleached.	140.00/ —	140.00/ —			
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	155.00/ —	155.00/ —	*155.00/ —	*155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd	135.00/ —	135.00/ —	†135.00/ —	*135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. * Freight allowed. † Varying Freight Allowances

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED MAY 7

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	$ — /6.75	$7.50/7.40
3	$7.50/6.50	$7.50/7.00	6.25/5.75	7.15/6.90
4	6.50/5.50	6.50/6.00	5.50/5.00	6.50/6.25
5	5.50/4.50	5.25/5.00	4.75/4.50	5.75/5.40
6	4.50/4.00	4.75/4.50	4.00/3.75	4.50/4.00
7	4.00/3.00	4.00/3.00	3.25/2.75	3.00/2.75

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	May 11	May 11	May 11	May 11
No. 1 Mixed Paper	$ 7.00/ 8.00	10.00/ 12.00	9.00/ —	13.00/ —
No. 1 News	14.00/ 15.00	15.00/ —	18.00/ —	18.00/ —
Overissue News (Lg. size)	13.00/ 15.00	15.00/ 17.00	23.00/ —	20.00/ —
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	14.00/ —	15.00/ —
Old Corrugated Containers	24.00/ 25.00	23.50/ 24.00	23.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	35.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	35.00/ 37.50	37.50/ —	37.50/ —	35.00/ —
(Semi-chem. medium)	47.50/ 50.00	45.00/ 50.00	45.00/ 47.50	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	24.00/ —	35.00/ —
White Newsblanks	60.00/ 65.00	48.50/ 55.00	45.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	60.00/ 65.00	55.00/ —	70.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	65.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	95.00/ —
Hd. White Env. Cuts	100.00/105.00	105.00/115.00	90.00/ —	113.00/ —
Col. Tab. Cards	55.00/ 57.50	55.00/ 57.50	52.50/ —	40.00/ —
Manila Tab. Cards	77.50/ 80.00	77.50/ 80.00	75.00/ —	65.00/ —
No. 1 Col. Ledger	40.00/ 45.00	37.50/ 42.50	47.50/ —	35.00/ —
White Ledger	60.00/ 62.50	60.00/ 65.00	57.50/ —	55.00/ —
Mixed Book & Mag.†	25.00/ 28.00	— / —	17.00/ —	— / —
No. 1 Books‡	30.00/ 32.50	24.00/ 26.00	35.00/ —	17.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

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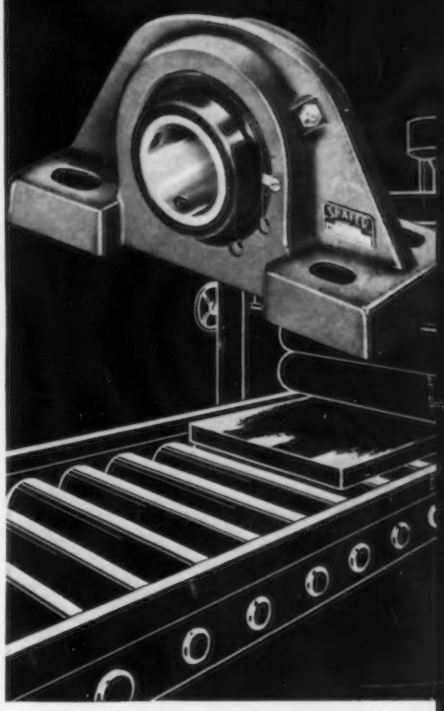

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OBITUARIES

Robert D. Rusch, 51, manager of the Chase Bag Co. paper mill in Chagrin Falls, Ohio, died of a heart attack on May 6 at his home in Chagrin Falls.

Under the direction of Mr. Rusch, an expansion program was under way at the Chase mill where he had been manager since March 1957. He spent his entire business life in the paper industry, having been previously with the Mosinee Paper Co. in Mosinee, Wis., International Paper Co. in Ticonderoga, N. Y., and the Kimberly-Clark Corp. He held a master's degree from the Institute of Paper Chemistry and was a graduate of Lawerence College, Appleton, Wis.

Jeremiah J. Cote, 60, a native of Bartlett, N. H., died on May 6th of second and third degree-burns on his face and body. Mr. Cote was killed when a high pressure steam pipe burst at the boiler plant of the S. D. Warren Co., Westbrook, Me.

Alvin A. Anderson, 63, executive vice president of the Corrugated Container Co., Columbus, Ohio, died at his home on May 5.

Edward L. Lincoln, retired executive of the S. D. Warren Co., died May 1st at his home in Portland, Me.

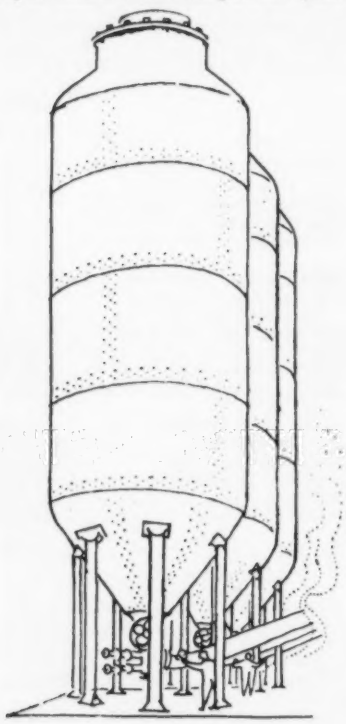
With the Warren firm for more than 45 years, Mr. Lincoln was personnel and safety director at his retirement in 1956.

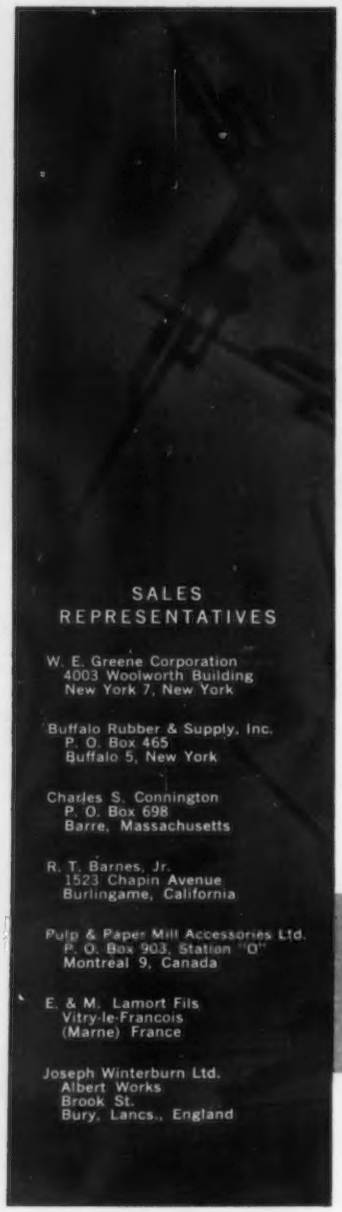
Lewis W. Smith, 91, formerly of Philadelphia, retired former treasurer of the American Fiber-Velope Mfg. Co., Collingdale, died April 29th at his home in Lakeland, Fla.

Harry Munson Alling, president-treasurer of the Alling Paper Co., died May 2nd in New Haven. He was a native of New Haven.

Joe Sullivan, vice president of the Bowaters Paper Co., and widely known in the newspaper publishing field, died April 29 in a White Plains, N. Y., hospital following a surgical operation. He was a resident of Scarsdale, N. Y.

Thomas S. Hollingsworth, eastern sales representative for the River Raisin Paper Co., died May 7 in Syracuse, N. Y. after a long illness. He had been associated with the paper concern for the past 37 years.





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Few qualifications for manufacturing count more than experience. And when experience has been concentrated within a specialized line of endeavor it adds value to the product.

Lodding Doctors carry that extra value derived from experience — experience accumulated over thirty years of specialization in the manufacture of doctors, doctor blades, blade holders and their accessories. During this period, Lodding has built and installed doctors for every conceivable doctoring application, under all conditions and of every type and size, up to and including the Great Lakes Paper Company's 340 inch newsprint machine.

Installations of Lodding Doctors are found in nearly every paper mill in this country and in many mills abroad. Each was precision engineered and precision manufactured for the specific roll being doctored.

Doesn't it make sense to rely on specialized experience? Most mills have found that it does. Next time, get Lodding Doctors. Then you'll profit too.

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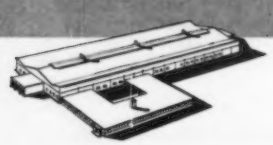

At Gould Paper Company Bearing Temperatures Reduced 50° F*

Automatic, centralized Micro-Fog Lubrication was installed early in 1957 by Gould Paper Co., Lyons Falls, N. Y., on the dryer section of this paper machine. It has lowered the average operating temperature of all 86 half bearings (9½" dia. x 12") from 189° F to 139° F. Two other similar machines were also converted by this company to Micro-Fog — a total of 368 bearings of all types.

The magic of Norgren Micro-Fog *provides these additional benefits at Gould:*

1. Elimination of frequent bearing failures.
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4. No product contamination.
5. 66% reduction of lubricant consumption.
6. Perfect lubrication for all bearings.

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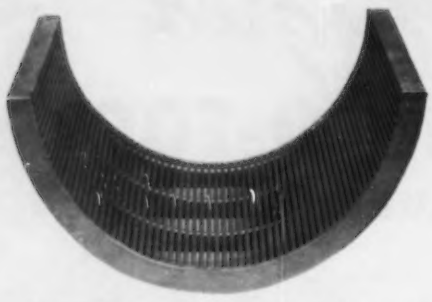
raise paper and pulp production



Hendrick Wedge Slot is made with small openings to assure fine screening. Yet, the special Wedge Slot construction affords far greater draining and screening capacity than many other types.

Here's another big plus: Wedge Slot's profile bars are "precision shaped" to maintain uniform width of slot openings the entire length of the screen as wear progresses.

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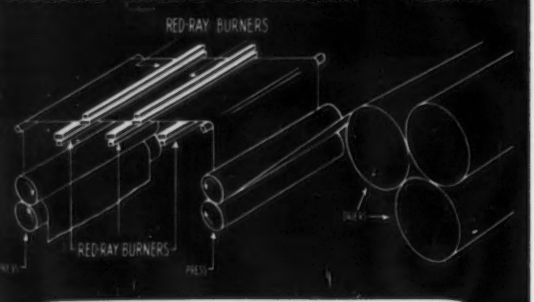

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REDUCES VISCOSITY

PERMITS REMOVAL OF MORE WATER AT THE PRESS

Easy to install on existing equipment. Write to:

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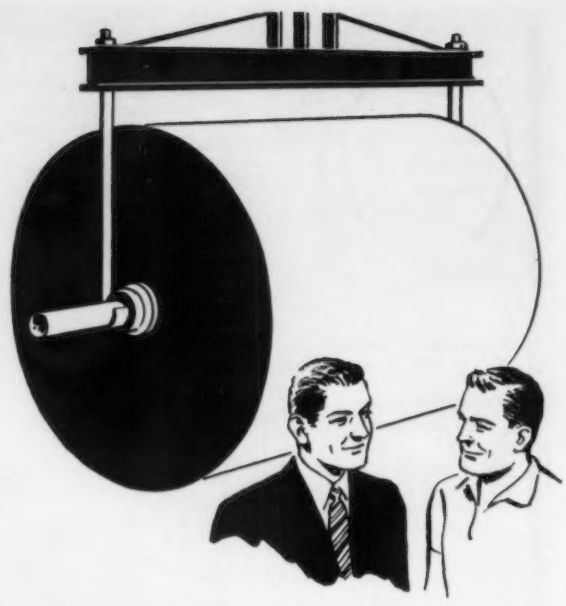

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"...in tonnage of fine M. F. paper"

Butterworth Dura-Smooth Calender Rolls rate high with Mill Superintendents for the tonnage they handle, the finish they produce.

Just one Butterworth Refill in the stack with any other roll will show you why. Delays for turning down and refilling are reduced. Tonnage goes up. Finish is uniform, better too. Butterworth Rolls are made to exact specification, and pretested for hardness, smoothness and density before delivery.

You can get Butterworth Calender Rolls new or refilled for all makes of calenders. Write for quotation.

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Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

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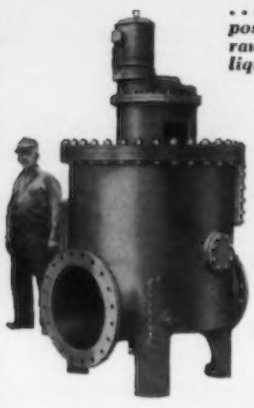
. . . for efficient removal and disposal of suspended particles from raw or process water and other liquids



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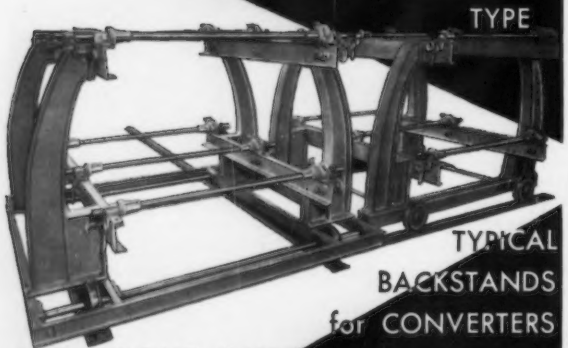

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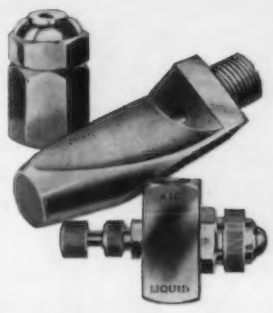

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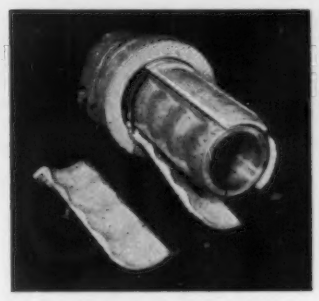
Dilts LIGHTWEIGHT EXPANDING CHUCK

Cuts Roll Shaft-up Time by 50%



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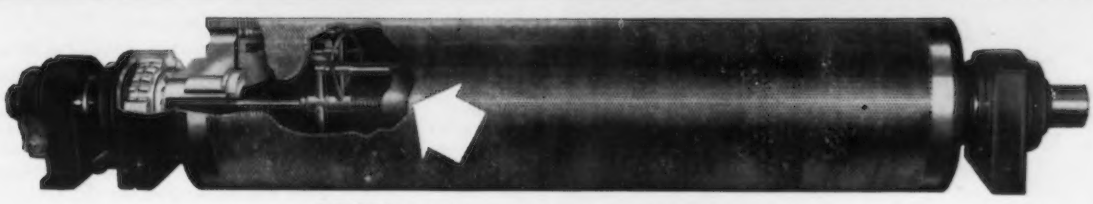

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- **SEAL STRIPS**—provide uniform water seal and lubrication to reduce shell friction and wear; assure better water removal with less power. Need no adjustment.
- **MAINTENANCE-FREE INTERNAL BEARINGS**—water-lubricated, require no bearing seal or greasing. Made of special resinous wear resistant material.
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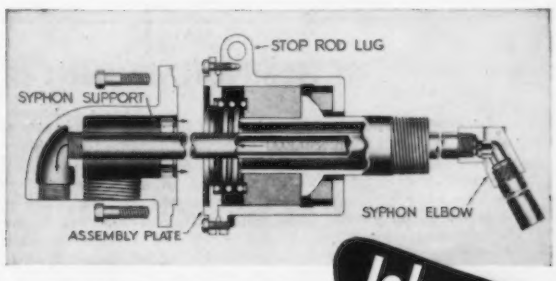

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